The IRON AGE

October 9, 1958 A Chilton Publication The National Metalworking Weekly

Auto Engineers Challenge Basic Car Concepts P. 37

The Long-Term Trend in Metals Prices – P. 42

New Facts About Underground Corrosion – P. 77

Digest of the Week – P. 2-3

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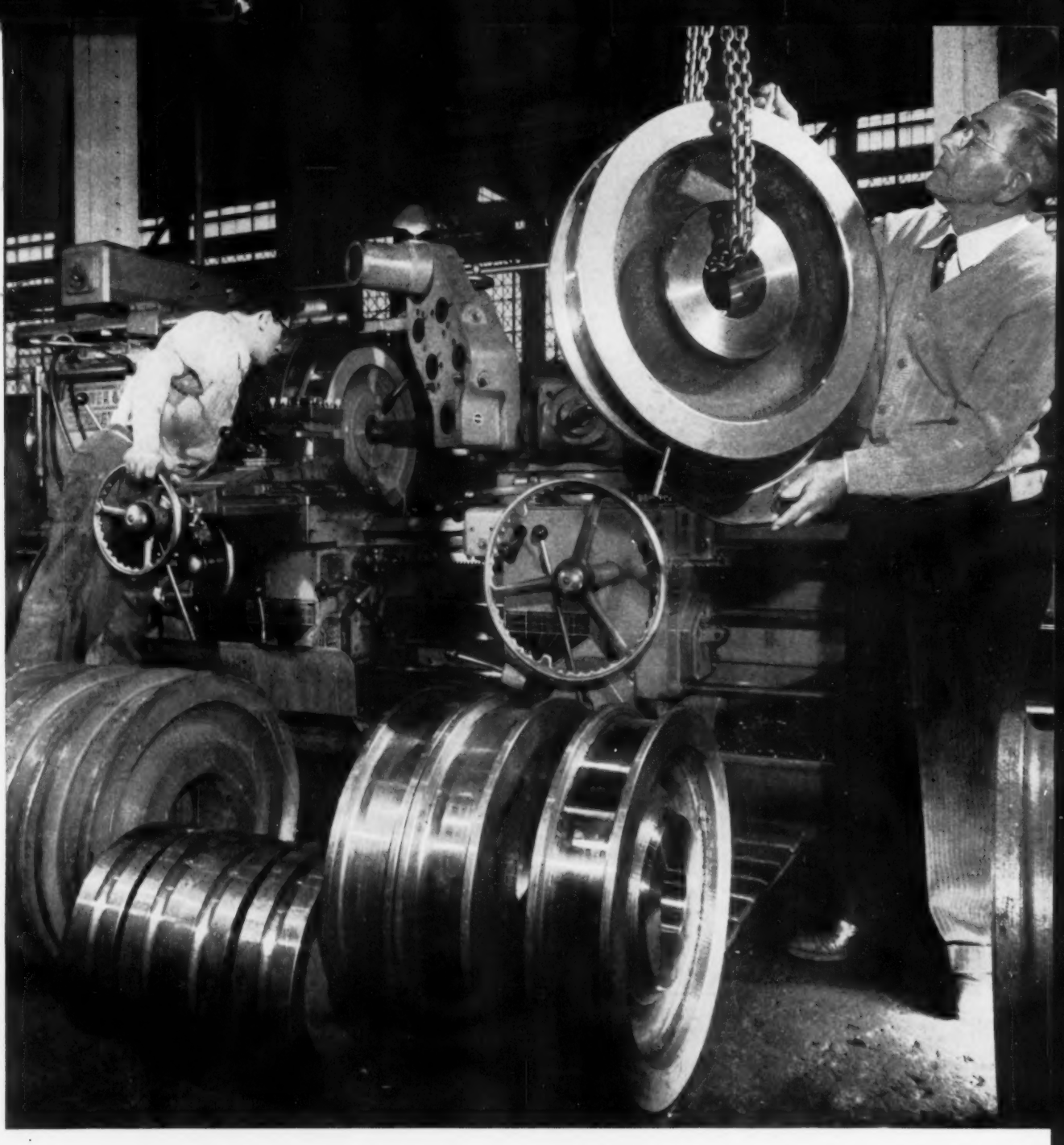

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The IRON AGE

October 9, 1958—Vol. 182, No. 15

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Containerizing Trend—The idea of shipping products in standard containers isn't a new one. But it's had little luck in the past because of inadequate handling equipment. Now the picture is changed. P. 40

AUTO LABOR PACTS

Peace May Be Delayed—Marathon talks finally brought new three-year pacts between auto union, GM, and Chrysler. Solution of local UAW grievances remains. P. 41

CANADA

More U. S. Money—Despite the recession U. S. industry will pour more money into Canada in 1958. In the last 60 days at least four major U. S. corporations have indicated, privately, the plants they will build in Canada will be twice the size originally planned. P. 44

TIN MARKET CALAMITY

A Warning Sign—When the Reds dumped tin on the world market recently, it nearly wrecked the Bolivian economy. Now it's proposed that a group be formed to fight any similar Red maneuver. P. 45

MISSILE METAL NEEDS

Spelled Out — Missile planning will require materials with a higher strength-density ratio, SAE meeting

Metalworking

told. Steels now on the market are not of high enough strength, one speaker believed. P. 61

AUTOMATIC ASSEMBLY

It Can Help Cut Costs—A switch to automatic assembly can pay off, machinery builders point out. If your work is complex, volume large enough, and product designs stable a change may be worthwhile. P. 63

FEATURE ARTICLES

UNDERGROUND CORROSION

Long-Range Study—Now in its final stages, a 36-year study provides a detailed picture of how buried metals behave. Nearly 37,000 specimens representing 330 kinds of materials have been exposed for periods up to 17 years at 128 test sites throughout the U. S. P. 77

ELECTRIC ARC SMELTING

Process Adds Economy—The innovation that could bring about a boost in electric furnace smelting is known as the Strategic-Udy direct iron reduction process. It uses a direct-fired rotary kiln for partial pre-reduction of iron ore before charging. P. 81

DEPRECIATION COSTS

A Quick Way to Check—A "short-hand" method for telling how much a company has overstated profits by understating depreciation uses consumer price index in assigning inflation factor. It's a graphic way to show how much inflation costs. P. 84

DRAW DIE

Forms Tapered Parts—A draw die with movable segments maintains constant ironing and trapping pressure during draw forming. Variation in material thickness serves as a cam to operate die segments. P. 86

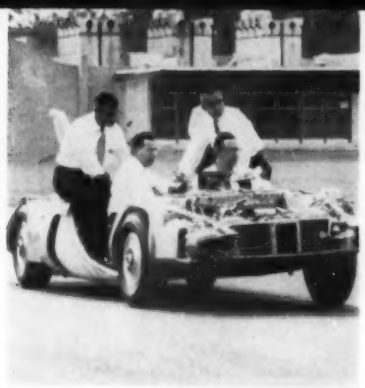
FORM MILLING CUTTERS

Use Right Methods—Form milling cutters can boost machining efficiency by doing jobs in one setup that once needed several operations. A few tricks can make a lot of difference in production. P. 88

MARKETS & PRICES

METAL PRICES

No Leveling Off—Don't look for metal prices to stabilize in 1959 or the years following, says large manufacturer. Survey indicates average boost of 5 pct next year and 17 pct in the next five. P. 42



LOOKING AHEAD: Tense expectation is evident on the faces of these General Motors engineers. And with good reason. It's the trial run of the experimental Firebird III. These and other engineers are working on developments that could alter many of the auto industry's traditional concepts in the next decade. P. 37

FOREIGN MARKETS

Worthington's Plan—Worthington Corp.'s foreign operations earned $1.3 million last year. The firm attributes it to quality. P. 46

STEEL MARKETS

What's Coming—Tom Campbell, IRON AGE editor told a sheet metal group and a hardware group what to expect in steel in the last quarter and in 1959. P. 49

STEEL HEDGING

Buyers Are Watching Market—It's no longer smart to buy steel on a hand-to-mouth basis. Many buyers this week are ordering farther ahead as a hedge against further tightening of the market. P. 123

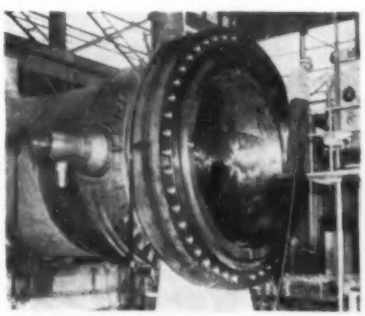
PLATING EQUIPMENT

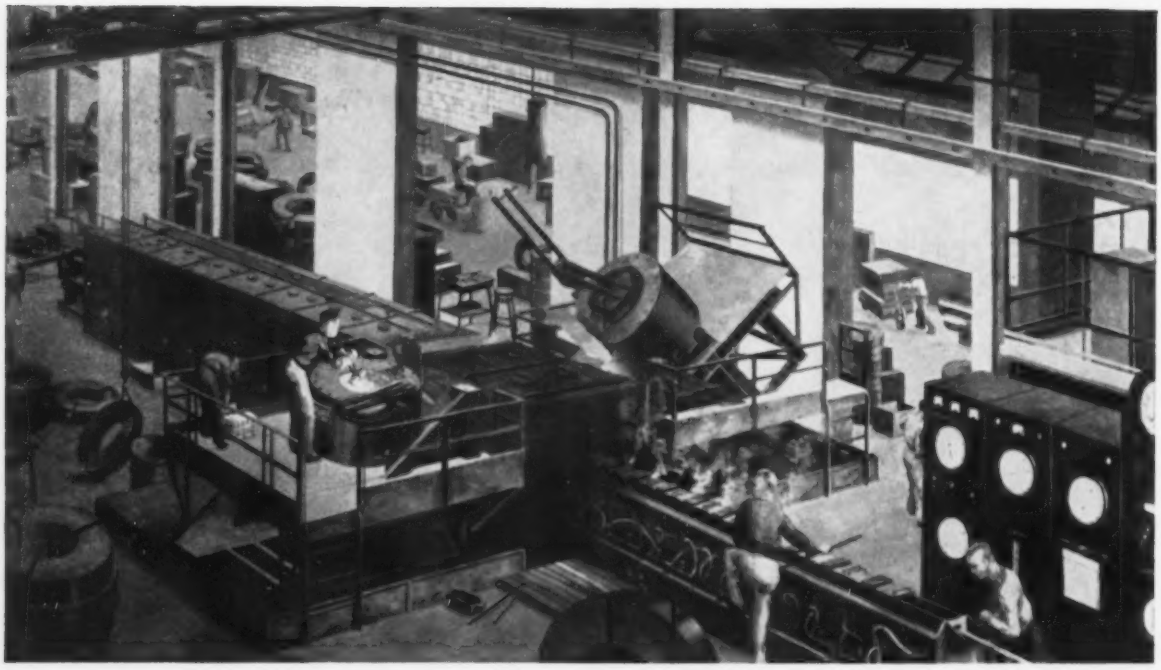
Sales Rebound — Plating equipment makers are encouraged by rise in orders which started in the second quarter. Market continues gaining strength. But biggest customer, the automakers, still hold back. P. 124

NEXT WEEK

SPECIAL FERROUS ALLOYS

More for Your Dollar—They may not lead in tons produced, but they're as indespensible as the major structural irons and steels. Next week's feature covers eight major kinds of special ferrous alloys, all important to industry, some vital to metalworking.





60 CYCLE INDUCTION MELTING OF HIGH LEADED BRONZES

15 years ago, THE CLEVELAND GRAPHITE BRONZE COMPANY, division of CLEVITE CORPORATION, pioneered 60 CYCLE INDUCTION MELTING of bronzes with up to 35% lead. Special furnaces developed by AJAX for this difficult job are an important element in their unique continuous production line for steel-backed bronze bearing strip. 60 CYCLE INDUCTION MELTING furnaces resulted in substantial improvements and cost savings over gas-fired units used earlier for that purpose. Today, CLEVITE operates six continuous lines in this country and abroad with AJAX 60 CYCLE INDUCTION MELTING furnaces, producing enough strip to make 130 million bearings and bushings per year.

The heavy duty 60 cycle inductor developed by AJAX and pioneered by CLEVITE will attain a lining life of one year with bronzes of substantial lead content. Electromagnetic stirring assures uniform alloy and close temperature control. Compared to externally fired equipment, metal loss savings run into many thousands of dollars per year. Recently, several large producers of leaded bronze castings converted their foundries entirely to 60 CYCLE INDUCTION MELTING.

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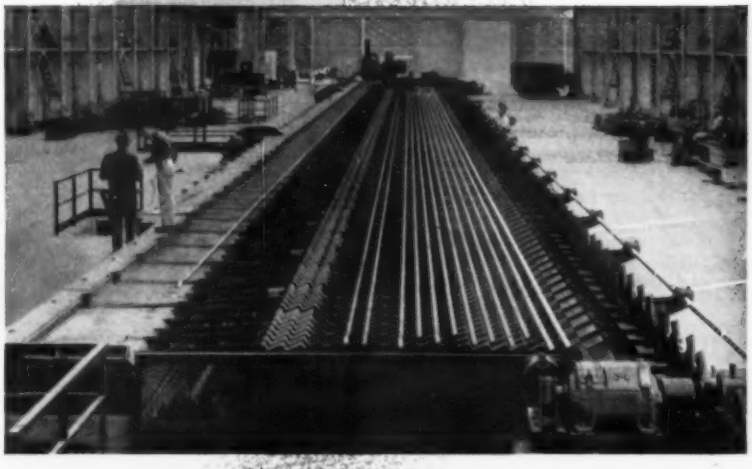

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RM 72

Armco ALUMINIZED STEEL Tubing Cuts Cost of Appliance Parts for Manufacturer

Venturi tubes for gas ranges made of Armco's hot-dip aluminum coated tubing provide resistance to heat and corrosion at less cost

Lincoln Brass Works, Inc., Detroit manufacturer of appliance components cut the cost of gas range venturi tubes by using Armco ALUMINIZED STEEL Type 1 Tubing instead of plated or ceramic coated steel tubing.

The company switched to Armco's special tubing after making a detailed engineering and cost analysis of materials acceptable to AGA for the application. Their tests showed that ALUMINIZED STEEL Tubing assured ample corrosion- and heat-resistance for dependable durability, and made possible appreciable cost reduction.

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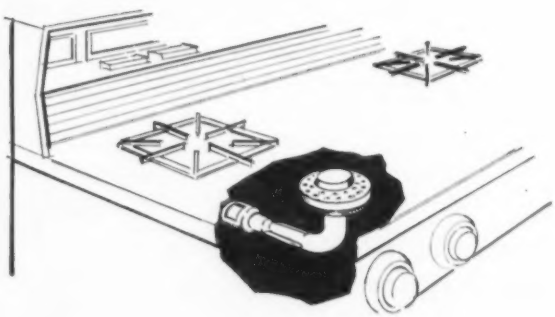
Armco ALUMINIZED STEEL Type 1 Tubing gives you all the advantages of light weight tubular construction plus top resistance to a combination of heat and corrosion. Its special coating won't discolor up to 900 F, resists destructive scaling to about 1250 F.

Because of these advantages, unmatched by any other metal tubing in its price class, ALUMINIZED STEEL Type 1 Tubing is widely used for heating elements; truck, tractor and automobile exhaust systems; heat exchanger tubes; flash tubes and similar parts.

Give *your* products an edge on competition with the design-improving and cost-cutting possibilities of Armco ALUMINIZED STEEL Tubing. It's available in O.D.'s from 3/8 to 3 inches, gages from 13 to 20, and special shapes.

For complete information on properties and available sizes, just fill out and mail the coupon.



New steels are born at Armco

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Send me complete information on Armco ALUMINIZED STEEL Tubing. We are considering it for_____

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The Organization Man: Fact or Fiction; or Both?

Don't underrate the importance of the quiet battle going on in men's minds over the Big Brother trend towards the Organization Man.

Popular versions are often based upon something less than fact. That is why the general picture of the Organization Man is somewhat as follows:

He is friendly. He likes to think he is influencing people. Often he takes a pushing around for the sake of his company or group. He takes his time; he is not a trigger decision man. He is undeniably objective in his viewpoints and acts without allowing his emotions free reign. He will often sacrifice his wife's life and wishes to the job of "getting ahead."

In contrast to this fellow—with the aid of time and lack of reason—we have the following picture of the "old" individualist:

He was rugged. He was often poor but proud before he reached the top. He was decisive and chockfull of stamina, character, and righteousness. He called his soul his own; ran his business to suit himself. His wife ape'd no one else's wife. If he killed himself—and others—with overwork he was a hero to the onward march of business.

Neither of these pictures is completely true. But there is enough in both to merit some soul searching today. Middle management has an uncomfortable way at times of taking on some of the most outlandish trappings of the Organization Man.

The old boys did act. They were paternalistic but they got results, too, with curiosity, egotism, shouting, wheedling and commands. They were less than the demons they are now painted. By the same token, many were less able than they seem in retrospect.

Many of today's top men—most of whom are the non-organization type—couldn't pass the battery of tests laid out for new and upcoming leaders. They aren't too different from the old boys; just more polished, less abusive, and a little more cooperative.

Unless these non-organization men foster more rebellion, personally trap their staffs now and then and insist that a man's home and wife are not company business, we are in for trouble.

We will create a lot of Milquetoasts who won't be able to punch their way out of a paper bag, because the "old man" wouldn't let them try.

Tom Campbell

Editor-in-Chief

"TASK-FORGING"...a new metal forming idea!

"It must be stronger, no larger or heavier, and must cost less per unit! Can you do it?" That's what a leading manufacturer asked COMMERCIAL.

The part? A ball-joint housing—flanged at one end, belled at the other, and open at both ends. It *was* being produced as a steel casting for a key part of the steering and driving mechanism in a line of earth moving equipment. A tough upset forging assignment? Certainly—even for COMMERCIAL!

At this point, COMMERCIAL'S "Task-Forging" group—double-teaming with the manufacturer—took up the challenge. It came up with the right answers and convinced the manufacturer that the housing could be produced as a closed-die forging—on an 8" upsetter from 4½" round bar stock by the internal displacement method. The result: A stronger part at less cost per unit. And here's why.

The controlled grain flow and efficient metal distribution afforded by upset forging assured maximum tensile and torsional strength for a stronger part. And savings in costs per unit piled up on the following counts:

1. Reduction in weight from 95 to 80 lbs.—or a 15 lb. metal saving per unit.
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Soviet Steel

Sir—The Industrial College of the Armed Forces desires to include in the required reading of its resident course your article: "The Russion Steel Industry," in the Sept. 4 issue.

Would it be possible for us to obtain 75 copies?—L. L. Henkel, Materiel Management Branch, Industrial College of the Armed Forces, Washington, D. C.

▪ Reprint supply is nearly exhausted though requests for a few individual copies can still be filled. —Ed.

Aluminum Bulletin

Sir—In a recent issue your Fatigue Cracks column made a reference to the Aluminum Bulletin. As we are interested in publications devoted to the aluminum industry we'd like a little information about the bulletin and any similar booklets.—W. J. McClure, Aluminum Dept., J. M. Tull Metal & Supply Co., Atlanta.

▪ The Bulletin is a quarterly magazine published by the Aluminum Assn. You can reach the Assn. at 420 Lexington Ave., New York City. Other publications are put out by the Reynolds Metals Co., 19 E. 47th St., New York City, and Kaiser Aluminum & Chemicals Co., 1924 Broadway, Oakland, Calif.—Ed.

"Oh-oh, I got paid in traveler's checks."

Stamp of Approval

Sir—Accept our congratulations on the splendid job you did in your special report on forgings (Aug. 21 issue).

When others write about subjects of great interest to us I think that we almost always feel certain reservations or perhaps unhappiness about at least a few of the things.

Your article is the exception. All of it is practical, accurate, impartial, and helpful. Here at Drop Forging Association we like it very much and are distributing substantial quantities of reprints.—D. M. Allgood, Exec. Vice Pres., Drop Forging Assn., Cleveland.

Plastic Tooling

Sir—I am interested in obtaining any further detailed information you may have on the plastic tooling plates mentioned in your Aug. 21 issue. Your assistance will be appreciated.—R. W. Lillie, Union Carbide Development Co.

▪ For further information write Furane Plastics, Inc., Los Angeles. —Ed.

Tapered Parts

Sir—We would appreciate more complete information on the item, "Die Forms Tapered Parts" described in a recent IRON AGE Newsfront section.—L. E. Vachon, Girard Associates, Chambersburg, Pa.

▪ Get in touch with Wallace Umphrey, Boeing Airplane Co., Seattle, Wash.—Ed.

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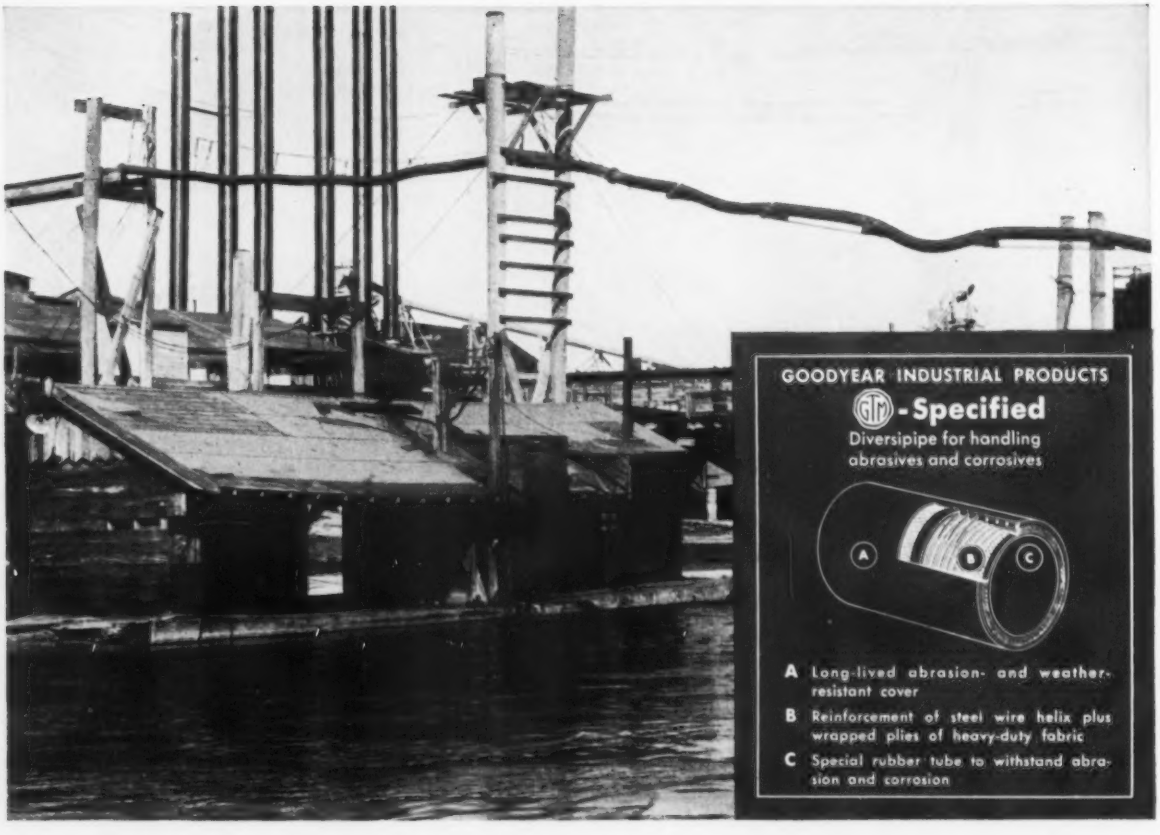
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B
C
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B Reinforcement of steel wire helix plus wrapped plies of heavy-duty fabric
C Special rubber tube to withstand abrasion and corrosion

New way to dispose of disposal problems

DISPOSAL OF corrosive bleach liquor posed a real problem at this Northwestern paper mill. One suggestion was to release it along the bottom of the adjoining river–distributing it widely enough to halt the fouling of fishermen's nets and threatened pollution of the water. But not even the strongest steel pipe could stand up under the corrosive flow–or the buffeting of river currents.

Then someone thought of hose–and of consulting the G.T.M.–Goodyear Technical Man. His recommendation: Diversipipe–rugged corrosion- and abrasion-resistant rubber pipe–joined at wide intervals by stainless steel couplings. Vented through these couplings, the troublesome liquor would be thoroughly dispersed. Result: this *Diversipipe installation has kept the river clean for 3½ years–promises years more service.*

Here, then, is a unique, low-cost means of waste disposal – adaptable to many situations. It's another example of the way the G.T.M. can be of invaluable help–wherever industrial rubber products are involved. And he's always quickly available through your Goodyear Distributor–or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

DIVERSIPIPE by

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IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

Peek at the Future

When Dick Raddant was assigned to do a special feature story on new automotive developments (it's on p. 37 of this issue), one of the logical stops was the General Motors Technical Center.

One of gadgets of the future that most intrigued him was the Unicontrol (see photo), the single stick that regulates speed and direction of a car, including braking and shifting, with the fingertips of one hand.

Under the watchful eye of Joseph B. Bidwell, of GM's Research Staff, Editor Raddant actually drove a Chevrolet equipped with the Unicontrol around the streets of the Tech Center.

Dick reports he had a little trouble at close quarters and low speeds, and isn't ready to try one in heavy metropolitan traffic without more practice. But he does believe it has possibilities, both for ease of handling the car and its potential space and weight savings, since it eliminates the entire steering column and many other mechanical parts.

Ben's Vision

Ben Franklin was one of the best in predicting future developments. Never one to say it couldn't be done, Ben always took the long-range view. Some of his ideas about aerial warfare are noted by the Franklin Institute of Philadelphia in announcing its annual Medal Day awards on Oct. 15.

Franklin was watching the first balloon flight in France in 1782, the institute says, when a critic scoffed, "What use is a balloon?"

"What use is a new-born baby?" Franklin snapped back. And then he went on to write friends in the Royal Society predicting that aircraft might "possibly give a new turn to human affairs. It will be impracticable for the most potent (ruler) to guard his domains. Five thousand balloons capable of raising two men each would not cost more than five ships of the line.

"Where is the prince who can afford so to cover his country with troops for its defense that 10,000 men descending from the clouds might not in many places do an infinite deal of mischief before a force could repel them?"

Arrows Away

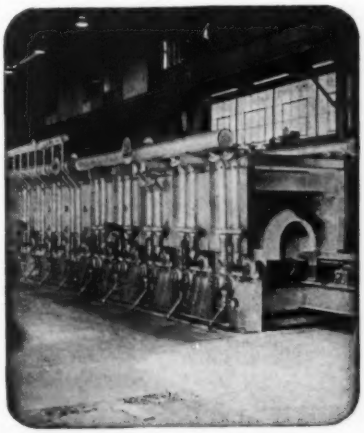
Never discard anything. You never know when or where it will come in handy. Take the cross-bow, for example. It was a pretty good weapon back in the Middle Ages. But in our Atomic Age the cross-bow is militarily out-phased. It just doesn't belong. Right?

No, it's wrong. The cross-bow is still going strong—helping scientists in nuclear reactor studies.

What, the scientists brooded, would take place if reactor control rods shot out of the core? And they hauled in a cross-bow to find out.

The investigators at the Stanford Research Institute are using it to fire small ounce-weight rods at metal targets ⅛ in. thick. These small-scale tests help decide what sort of shielding will be necessary if a full-scale reactor ever gives way.

SPEED HEATING
SAVE SPACE
IMPROVE QUALITY
WITH HI-HEAD



R-S HI-HEAD HEATS 25 TONS SLAB PER HOUR . . 75% LESS FLOOR SPACE . . ONE FOURTH LABOR

Now, heating of 25 tons of stainless steel slabs per hour is a continuous operation at Atlas Steels Ltd. The R-S Hi-Head Furnace reaches a high heat fast and maintains it uniformly in all parts of the furnace for the complete cycle. Heating time is reduced . . . there is no overheating of slab edges . . . and uniformity is assured on every piece. Labor is one-fourth that required on conventional furnaces. Floor space used is 75% less.

You can boost your "Quality Quota" if you heat with R-S Furnaces. For full technical details on faster slab heating write for the folder "Continuous Slab Heating."

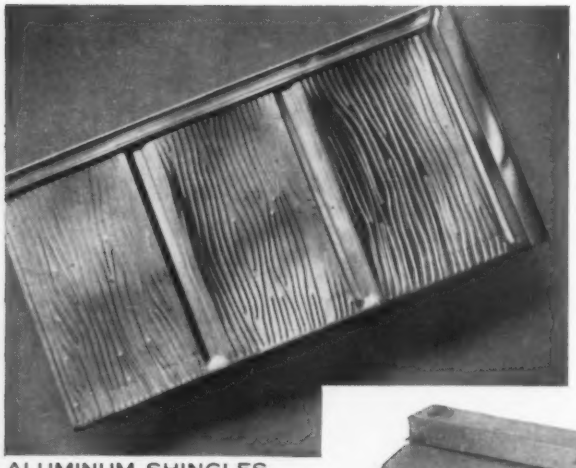
R-S FURNACE CO., INC.
North Wales, Pa.

IHEA

Car Hearth Furnaces
Continuous Furnaces
Rotary Hearth Furnaces

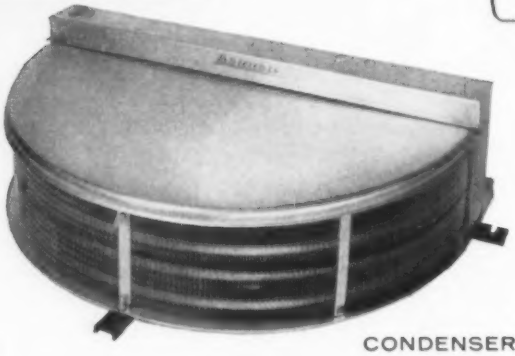
R-S FURNACES

When specifying aluminum for your product...



ALUMINUM SHINGLES

LIGHTING FIXTURES



CONDENSER COILS

Remember...

Every industry has one member who specializes in customer satisfaction

All Anaconda Aluminum Coiled Sheet is custom-rolled to your exacting specifications. In order after order, uniformity of temper is maintained by our precise production control. Modern rolling mills with X-ray gauge controls provide you uniform thicknesses and consistent yield per pound. Workability, even on deep draws, is assured by control of grain size. On narrowest widths, high-speed slitters cut exact widths with precision edges.

Our line includes gauges from .006" to .064"; widths from ⅜" to 54"; alloys: 1100, 1145, 3003, 3004, 5005, 5050, 5052, 5357. And watch for an expanding line of aluminum wrought mill products.

To take advantage of our modern plant flexibility and custom production policy, call our nearest District Sales Office or contact us direct. Write for the new booklet, "Anaconda Aluminum Coiled Sheet", Dept. A-10, 1430 S. 13th St., Louisville 10, Kentucky.

ANACONDA ALUMINUM

Made by Cochran Foil Corporation
LOUISVILLE, KENTUCKY
A SUBSIDIARY OF THE ANACONDA COMPANY

COMING EXHIBITS

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metal Show — Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

Power & Mechanical Engineering Show—Dec. 1-5, New York Coliseum. (International Exposition Co., 480 Lexington Ave., New York 17.)

MEETINGS

OCTOBER

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Society of Civil Engineers—Annual convention, Oct. 13-17, Hotel Statler-Hilton, New York. Society headquarters, 33 W. 39th St., New York 18.

Hoist Manufacturers Assn.—Membership meeting, Oct. 14, Warwick Hotel, Philadelphia. Society headquarters, One Thomas Circle Washington 5, D. C.

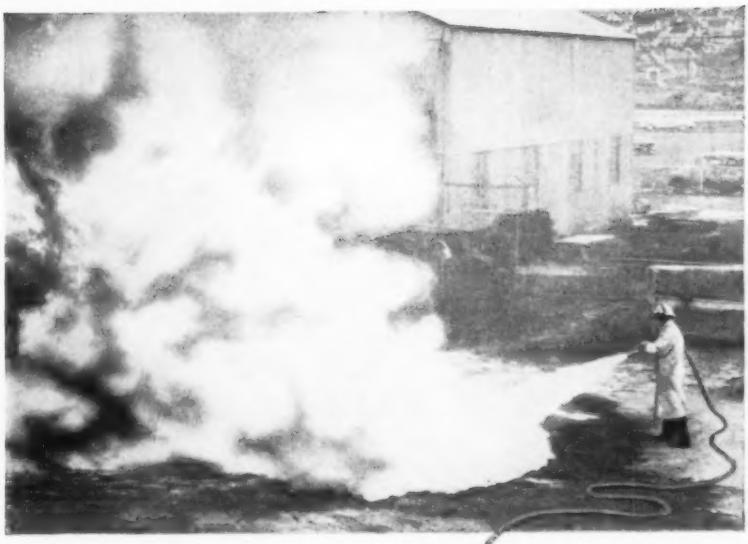
Wire Reinforcement Institute, Inc.—Annual fall meeting, Oct. 14-15, Park Plaza Hotel, St. Louis, Mo. Society headquarters, National Press Bldg., Washington 4, D. C.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

The Magnesium Assn. — Annual convention, Oct. 16-17, Fort Shelby Hotel, Detroit. Society headquarters, Chanin Bldg., 122 E. 42nd St., New York 17.

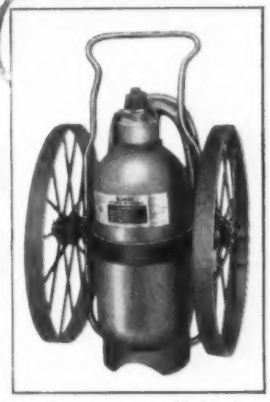
Foundry Equipment Manufacturers Assn., Inc.—Annual meeting, Oct.

(Continued on P. 16)



NEW!

One-Man Dry Chemical Kills More Fire Faster!



This new Kidde pressurized 200-pound extinguisher gets *more* fire-smothering dry chemical on a blaze *faster!* Its universal nozzle discharges a dense 40-foot stream that gives more efficient extinguishing action, greater heat protection for operator.

It has an *extra* 50 pounds of dry chemical to discharge on any stubborn blaze. Not 150 pounds, but a full 200 pounds of dry chemical – a 33⅓% bonus for safety! Yet its total weight is less – no heavy, cumbersome gas cylinder.

It's faster to operate too. No valves to unscrew. No wait for pressurization, for dry chemical to fluff. No pressure reducer to malfunction. Just remove safety pin, swing valve toggle, and flip "on-off" nozzle lever. There's no hose whip either.

Only Kidde has the Bridgeman seal head assembly. When pressurized at 450 psi with nitrogen or *dry* air, an inner force of three tons acts on the seal – the more pressure, the tighter seal. Virtually leak-proof, tamper-proof.

Check these other benefits. A low, balanced center of gravity, wider handle, compact design, and larger, lubricated wheels make it easy to move. It's weather and corrosion protected. And the shielded dust-and moisture-proof pressure gauge tells at a glance this extinguisher's readiness for action.

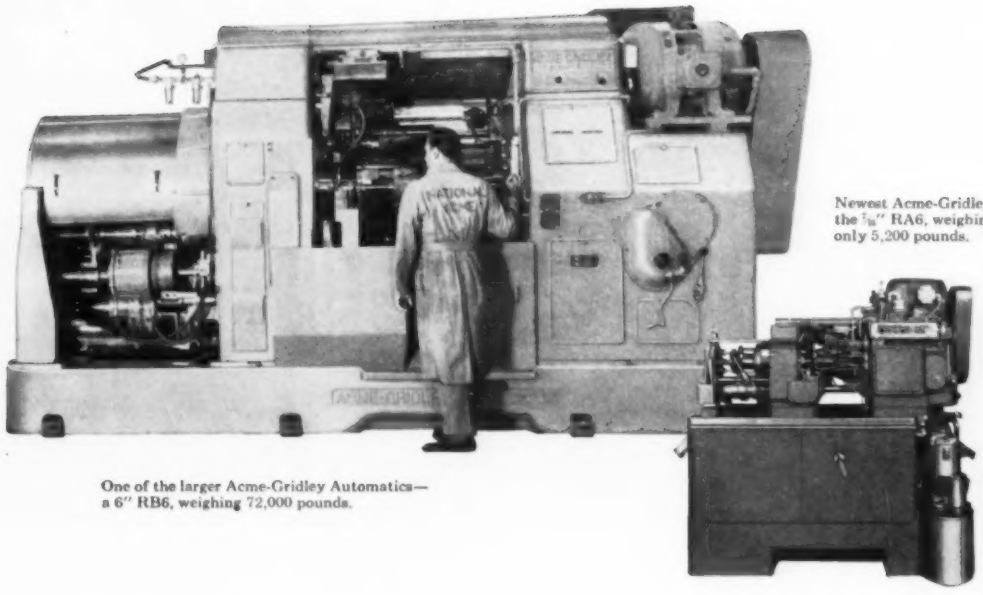
Write Kidde today and get the full story on this new U.L.-approved One Man Fire Engine.

Kidde (K Kidde)

Walter Kidde & Company, Inc.
1049 Main St., Belleville 9, N. J.

Walter Kidde & Company of Canada Ltd.
Montreal—Toronto—Vancouver

Produce parts like these on



Newest Acme-Gridley—the $\frac{1}{8}$" RA6, weighing only 5,200 pounds.

One of the larger Acme-Gridley Automatics—a 6" RB6, weighing 72,000 pounds.

ACME-GRIDLEY automatics...

FORGET SECONDARY OPERATIONS!

Most parts machined on Acme-Gridleys are *completed* on Acme-Gridleys. Using these Automatics, you eliminate costly rehandling and, in many instances, avoid a sizeable second-machine investment.

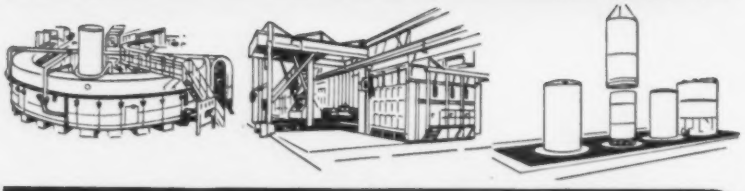
The advantage applies to parts weighing fractions of ounces or hundreds of pounds. And the wide-open tooling zone of every Acme-Gridley lends itself to a broad range of installations limited only by the tool engineer's ingenuity. It means that, for sheer capacity range, no line of automatic production equipment in the world equals Acme-Gridley.

If you produce parts like the ones illustrated, then Acme-Gridley Automatics must be in your present plans. Our representative can give you expert assistance without obligation.

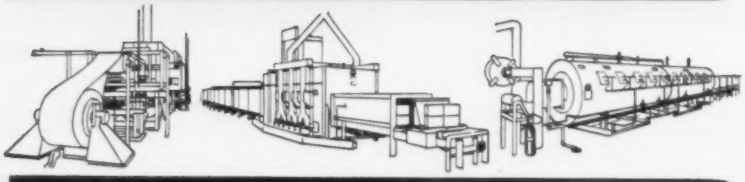
National Acme

THE NATIONAL ACME COMPANY, 175 E. 131st ST., CLEVELAND 8, OHIO • Sales Offices: Newark 2, N.J., Chicago 6, Ill., Detroit 27, Mich.

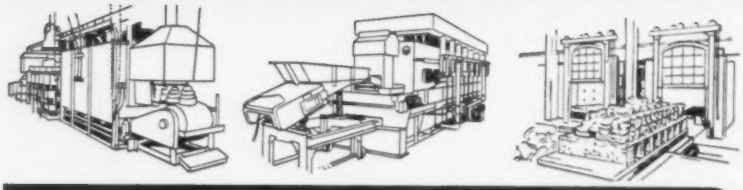
EF BUILDS ALL TYPES AND SIZES



GAS-FIRED, OIL FIRED and ELECTRIC



EF Builds the Furnace to Fit the Job



No Furnace is Too Large or Too Unusual

We have the engineers, the experience, the research and experimental departments and the complete manufacturing and erection facilities to handle any heat processing furnace problem.

Submit your production furnace problems to experienced engineers—*it pays.*

EF

BULLETIN No. 461

shows typical installations of EF Gas-fired, Oil-fired and Electric Furnaces.

Send for a copy today!

THE ELECTRIC FURNACE CO.

GAS-FIRED OIL-FIRED AND ELECTRIC FURNACES FOR ANY PROCESS, PRODUCT OR PRODUCTION *Salem - Ohio*

Canadian Associates • CANEFCO, LIMITED • Toronto 13, Canada

EXHIBITS, MEETINGS

(Continued from P. 13)

16-18, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, One Thomas Circle, Washington 5, D. C.

Conveyor Equipment Manufacturers Assn. — Annual meeting Oct. 18-21, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, One Thomas Circle, Washington 5, D. C.

American Coke & Coal Chemicals Institute—Annual meeting, Oct. 20-21, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters 711 14th St., N. W., Washington, D. C.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.

American Society of Body Engineers — Annual technical convention, Oct. 22-24, Rackham Memorial Bldg., Detroit. Society headquarters, 100 Farnsworth, Detroit.

American Gear Manufacturers Assn.—Semi-annual meeting, Oct. 26-29, Edgewater Beach Hotel, Chicago. Society headquarters, One Thomas Circle, Washington, D. C.

American Institute of Steel Construction, Inc.—Annual convention, Oct. 26-30, Greenbrier Hotel, White Sulphur Springs, W. Va. Society headquarters, 101 Park Ave., New York.

National Lubricating Grease Institute—Annual meeting, Oct. 27-29, Edgewater Beach Hotel, Chicago. Society headquarters, 4638 J. C. Nichols Parkway, Kansas City 12, Mo.

Ultrasonic Manufacturers Assn.—Annual meeting, Oct. 28, Hotel Cleveland, Cleveland. Society headquarters, 271 North Ave., New Rochelle, New York.

Metal Treating Institute — Annual meeting, Oct. 29-31, Hotel Cleveland, Cleveland. Society headquarters, 271 North Ave., New Rochelle, New York.

Consistent Quality Has Benefits for You

The reputation of Roebling high carbon flat spring steel is based on two uncompromising facts: its unexcelled dimensional and mechanical uniformity.

They are qualities that contribute immediately and directly to *your* increased production rates and decreased rejects.

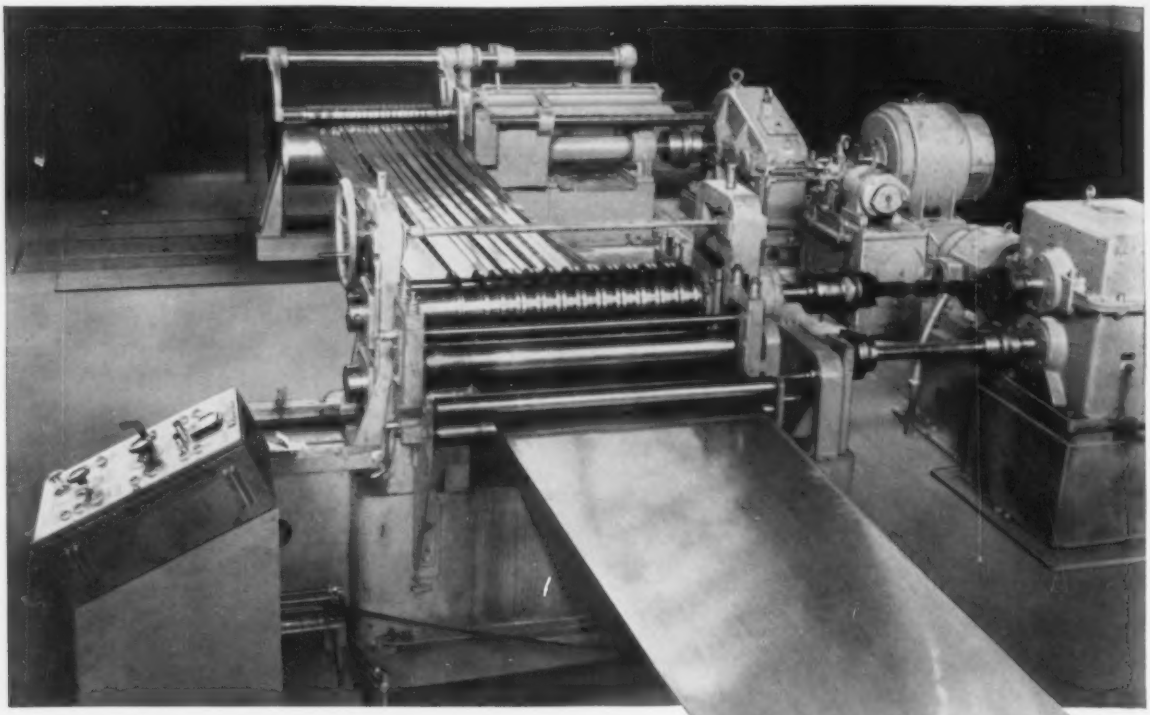
You are taking advantage of a collection of benefits when you specify Roebling. Write Wire and Cold Rolled Steel Products Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

Roebling high carbon flat spring steel is used for a wide variety of parts.

ROEBLING

Branch Offices in Principal Cities • Subsidiary of The Colorado Fuel and Iron Corporation

Roebling... Your Product is Better for it



Greater Profit and Operational Flexibility with a YODER SLITTER

Even if you use less than 100 tons of varied strip sizes per month, it will pay you to investigate the savings that are possible through the operation of a Yoder slitter. Savings per ton increase rapidly as coil size and width of strands decrease . . . so much, that under average operating conditions, a slitter will pay for itself in a few months.

From a small stock of standard mill-width coils, a Yoder slitting line enables you to meet unexpected demands, or to supply "special" width slit strands in a matter of a few hours. This flexible operation increases plant efficiency, resulting in savings of time and money through simplified production planning and greatly reduced strip inventories.

The Yoder line includes slitters of every size and capacity for coil or sheet stock. Send for the all-new, 1958 edition of the Yoder Slitter Book. It is a comprehensive text on the mechanics and economics of slitter operations with time studies, cost analyses, and other valuable data. Write to:

THE YODER COMPANY

5510 Walworth Avenue • Cleveland 2, Ohio

ENGINEERING YODER MANUFACTURING

ROTARY SLITTING LINES

PIPE AND TUBE MILLS (ferrous or non-ferrous)

COLD ROLL FORMING MACHINES

Visit Booth 2770, Metal Show, Cleveland, Ohio, October 27-31

USS "T-1" Steel can be flame-cut, welded, formed, sheared, punched, machined or forged.

How to **beef-up** your equipment without adding fat

Build it stronger, tougher and lighter with USS "T-1" Steel. This remarkable steel was developed especially to meet the needs for bigger tools, stronger equipment, larger yet less massive structures.

USS "T-1" Steel is a low carbon, quenched and tempered constructional alloy steel combining weldability and formability with exceptional strength and toughness. Because of its high yield strength (100,000 psi minimum) you can cut weight safely—in actual applications, as much as 25% to 50% weight reductions have been achieved.

Total costs can frequently be reduced, too. In applications such as heavy machinery, rotating parts, pressure vessels and bridge members, steel costs can be lowered by reduction in cross section and substantial savings experienced in welding, maintenance, freight and erection costs.

Also, in equipment subjected to impact abrasion, USS "T-1" Steel pays off. Users report service life increases ranging from 25% to 100%—or more. Power shovel buckets, bulldozer blades, coal and ore bins . . . all cost less in the end when made of "T-1" Steel because they last longer, cost less to maintain.

Write for free book. The many advantages, applications and cost-saving features of this versatile steel are completely described in our book USS "T-1." United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS and "T-1" are registered trademarks

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

USS **United States Steel**

Why cyclotron magnet frames are made from forgings

Man is in a desperate race to learn more about magnetics. One famous acres-big cyclotron could be reduced to the size of a steamer trunk if they could only find a way to increase the magnetic field strength by 20 times. And already we see evidence that very strong magnetic fields may hold the secret to one of man's most sought-after dreams: sustained nuclear fusion power generation.

But when you double the strength of a magnetic field, the energy density or pressure increases *fourfold*. A not-uncommon 50,000 gauss magnetic field exerts a pressure of about 1,400 psi; but other laboratory experiments have already created fields of 1½ million gauss for a few microseconds, and they confidently expect to hit *10 million* gauss before long!

To contain the fantastic forces, designers of very large electromagnets turn to high-quality forged steel parts, and they very often come to United States Steel to ask for USS Quality Forgings.

The picture shows a cyclotron electromagnet frame that will go into service at Oak Ridge National Laboratory, Oak Ridge, Tennessee. It is made from six USS Quality Forgings that total 193 tons including the two cylindrical pole pieces. The pole pieces are machined to a .005″ flatness, and are parallel to within .005″. These tolerances are essential for close control over the bombarding particle beam—which often operates at velocities which approach 50,000 miles *per second*. All six forgings were melted, forged, machined, heat-treated and inspected right at our Homestead Forgings Division, and we also furnished all dowels (4½″ in diameter), nuts, bolts and lifting eyes.

Many cyclotron and nuclear reactor parts are made from USS Quality Forgings because buyers have learned that they are made from the finest steel, on the most modern equipment, by the most skilled forging men in all the world. No matter what kind or size of USS Quality Forgings you buy, you get the advantage of these same facilities. Please address inquiries or requests for our free forgings booklet to United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

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USS United States Steel

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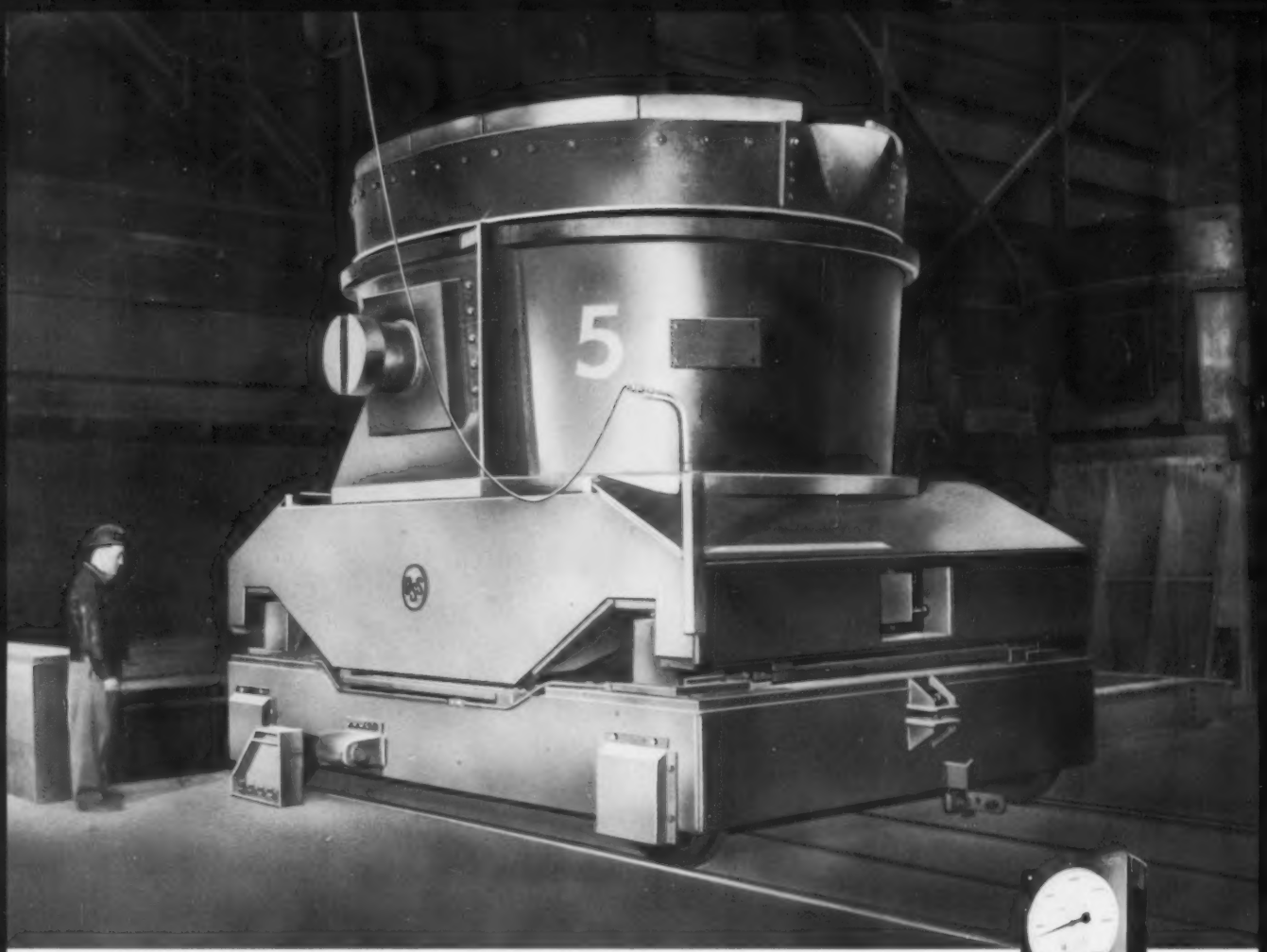
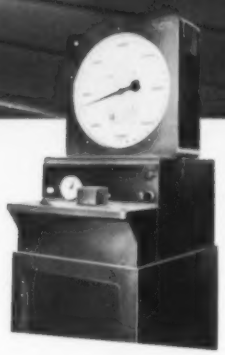




Weigh at any point without track scales with this Hot Metal Transfer Car

THIS Hot Metal Scale Transfer Car transports ladles of molten steel. Equipped with a hydraulic-electronic recording scale, this unique car enables one operator to record the weight of contents of the ladle at any point along the track.

Sixteen feet long, 11 feet wide, and 6 feet high (without ladle), the car is all-welded from rolled steel plate, and all welds are properly stress-relieved. It is built for operation on 9′3″-gage track, weighs approximately 59,000 pounds unladen, is designed for 100-ton ladles, and will easily carry 130 tons. A steel frame furnished with this car also adapts it to accommodate a 35-ton ladle.

The most important feature of the car is its weighing apparatus, which employs four 200,000-pound hydraulic-electronic load cells (one under each corner of the upper half of the body) that relay impulses through a trolley cable to an electronic scale located away from the heat of the ladle. This scale permits the operator to read the weight from a dial and provides him with a printed card for a permanent record. Weights thus recorded are accurate within 0.5%.

Driven by a remote-controlled car-puller, this car is fitted with splash guards, spring bumpers, and a husky tow bar. It is but one example of the many special-purpose USS Industrial Cars available for use in modern steel plants. For further information on this or any other industrial car—built to your requirements—send your inquiries to United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS is a registered trademark

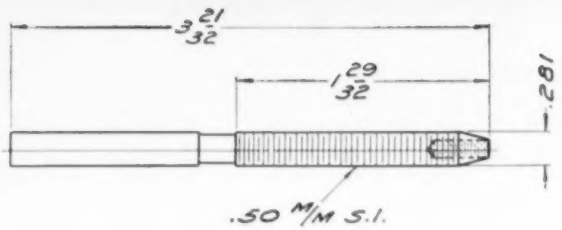
United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Export Company

USS United States Steel

HIGH SPEED machine

for small diameter precision threading

JOB SPECIFICATIONS:



Part:	Micrometer Spindle
Location:	Blanchard Engineering & Electric Co., Chicago, Illinois
Equipment:	5C Lead Screw LANDMACO Threading Machine— 5VVV LANCO Hardened & Ground Head— LANDIS Tangential Chasers
Workpiece Material:	Stress-proof steel (C1144) Cold-drawn, strain-relieved, 260 to 280 Br.
Thread Specifications:	
Diameter	.281"
Length	1-29/32"
Type	.50 M/M System International
Tolerance:	.2683-.2688" P.D., absolute concentricity and lead required
Production:	195 per hour
Tool Life:	625 pieces—average between chaser grinds

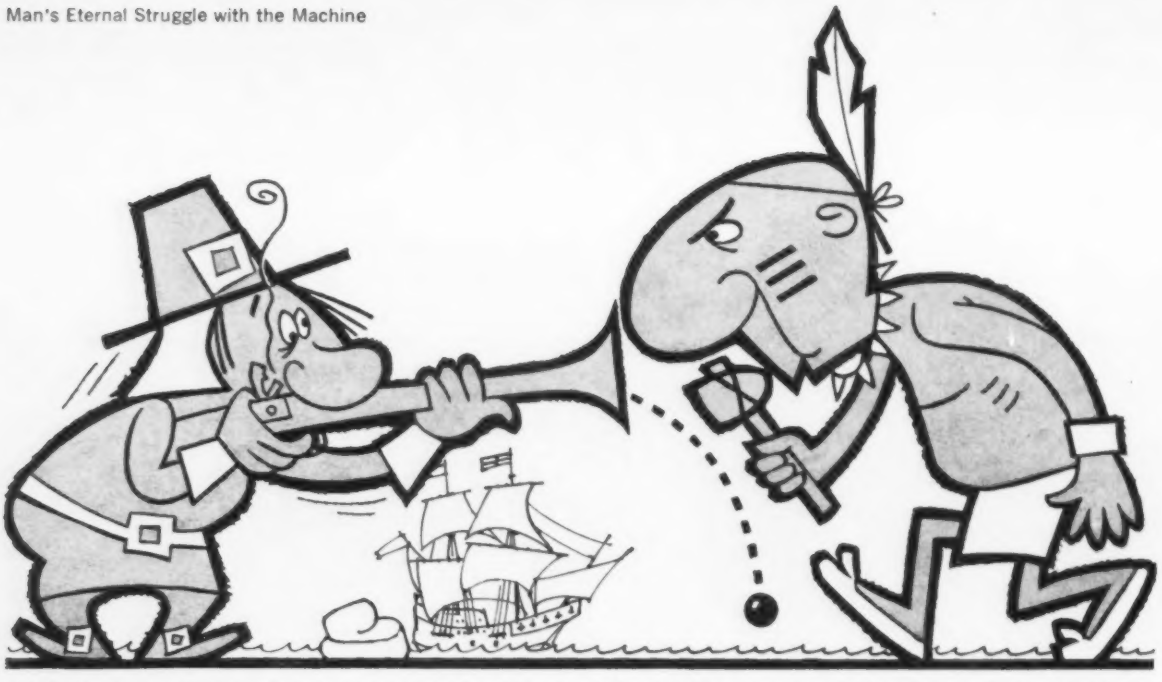
The 5C LANDMACO is a compactly-designed small machine, with 8 spindle speeds ranging from 150 to 1000 RPM, for precision threading of parts ranging from #4 to 5/8" in diameter. Leadscrew feed, air-operated carriage front, and air-operated carriage return are available as extra equipment. In addition, there are a variety of special carriage fronts, such as the lever-operated collet front used in this application, for holding difficult-to-grip workpieces. Send specifications and ask for Bulletin H-74 . . . let us show you how this LANDMACO Machine will handle your threading operation efficiently and economically.

497

LANDIS *Machine* COMPANY

WAYNESBORO · PENNSYLVANIA

Man's Eternal Struggle with the Machine



RISING COSTS AND SHRINKING PROFITS EXERT UNUSUAL PRESSURES ON PROCUREMENT

What is the risk of letting conditions tempt you to select the lowest bid?

You're in a tough spot to say the least!

Because if you care at all about *your* future or your company's profits, you take every precaution to make sure that "real deal" price tag is hanging on a machine that *will* do your job.

Obviously, price alone is indicative of nothing more than the bidder's determination of cost, plus the profit any manufacturer must earn to remain in business—nothing more—no true suggestion of value . . . and, of course, never even a hint of equipment suitability to *your* needs.

Unfortunately, the lowest bid often results from price cutting under competitive pressures. And price cutting *necessarily* down grades equipment value—unless the price-cutter is in business for reasons other than making a profit!

Sciaky resistance welding and production equipment *must* satisfy *your* manufacturing requirements. And Sciaky manufacturing operations must earn a profit just as your company must. That's why Sciaky *first* determines what *will* satisfy your requirements, and then figures the cost of putting it to work for you.

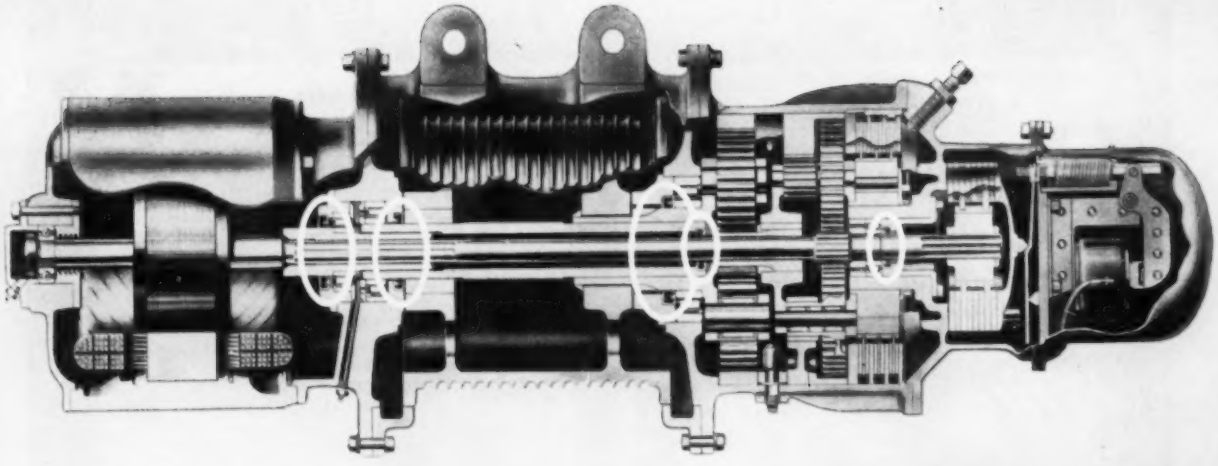
Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

Recently a procurement official boasted of his subterfuge to reduce costs . . . "tell every vendor his bid is way out of line, and you can brow-beat them into substantial price reductions." Besides the question of ethics, he's cheating his company of its ability to manufacture profitably, as well. Because no vendor can deliver more than he gets paid for—that is, not if he intends to stay in business. When that official's manufacturing operations begin to sag under the dead weight of phony equipment bargains, who do you suppose is going to be holding the proverbial bag?

SCIAKY

SCIAKY BROS., INC., 4923 W. 67th STREET, CHICAGO 38, ILLINOIS • POrtsmouth 7-5600

MORE ABOUT THE GARLOCK 2,000



General-purpose KLOZURE Oil Seals (Model 63 cutaway right) afford complete protection at important bearing locations (circled above) on the Shepard-Niles "Liftabout" Hoist.

Garlock Klozure* Oil Seals

assure durable, dependable performance on tough sealing jobs

Friction and bearing wear, hazardous to any industry, are especially harmful in materials handling That's why Shepard-Niles and other leading crane and hoist manufacturers specify Garlock KLOZURE Oil Seals for complete bearing protection. Shepard-Niles "Liftabout" is typical of how Garlock KLOZURES not only exclude dust and foreign matter from bearings but also retain the important lubrication—both of which add to greater dependability during rugged hoist operation.

Designing Garlock KLOZURES into your equipment protects bearings with oil seals that are durable, economical, and easy to replace. Garlock KLOZURES can be applied on low, medium, or high speed service. Whether your application is general-purpose in nature, or there's a specific job to be done, Garlock has a KLOZURE design for you.

KLOZURES are another of the Garlock 2,000 . . . two thousand types of packings, gaskets, and seals for every need. The only complete line. It's one reason you get unbiased recommendations from your Garlock representative.

Call him or write for KLOZURE Catalog 20.

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THE GARLOCK PACKING COMPANY, Palmyra, N. Y.
For Prompt Service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

GARLOCK

Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products.

WHY BUY METAL YOU DON'T USE?

Switch to Allegheny Ludlum Cast-to-Shape Tool Steel

FORGING

Stepped-out forging for fabricating spinning cone: 2300 lbs.—$2691 material cost plus cost of machining.

CAST-TO-SHAPE

Cast-to-shape spinning cone 1059 lbs. $860.97 Includes cost of the pattern.

$1,831 Saved by changing to Cast-to-Shape

Why pay for metal that ends up as chips on your floor? Here are two fine reasons for switching to Allegheny Ludlum cast-to-shape tool steels.

CAST-TO-SHAPE MEANS YOU BUY FEWER POUNDS OF METAL.
Because the tool you buy is closer to its finished shape, you obviously spend less money on original metal. In the above example, the savings in metal cost alone amount to $1,894.

CAST-TO-SHAPE MEANS LESS FINISH MACHINING.
A casting like that above has only ¼ to ⅜ inches of machine stock on all surfaces, requiring very little machining compared to solid chunks. Cast-to-shape tooling is especially economical when working with intricate shapes.

Allegheny Ludlum, a tool steel producer who makes cast-to-shape materials, casts them with the same precise quality control for which their tool steels is known. A full line of cast-to-shape tool steel grades is available. You'll find ones with high resistance to abrasion, compressive strengths of approximately 400,000 psi, easy machinability, hardening with almost no distortion, toughness, high red hardness, and the capacity to take a high polish.

Find out now how you can cut costs on your complex tools. Write for FC-4, a 28-page technical discussion of A-L's Forging and Casting Division with applications, pattern information, design tips, analyses, and heat treating instructions. Or call your nearest A-L tool steel warehouse or distributor.
ALLEGHENY LUDLUM STEEL CORPORATION, OLIVER BUILDING, PITTSBURGH 22, PENNA.
Write to Dept. A-10.

WSW 7270

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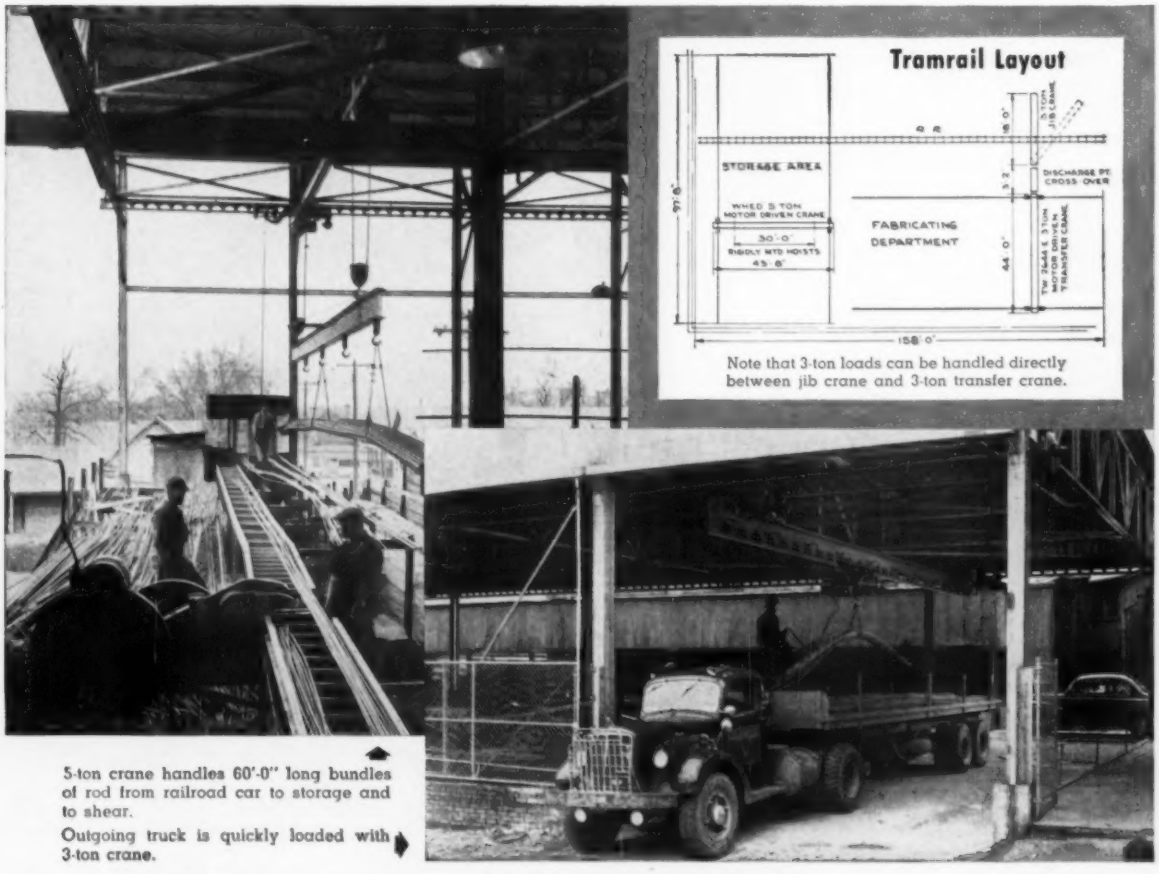

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This new powder, designated Republic Type 6460, provides these advantages and features:

- Minimum tensile strengths at 6.4 density of 60,000 p.s.i. as sintered, and 100,000 p.s.i. heat treated, as determined on standard MPA Test Bar.
- *Can be used with existing operating equipment.*
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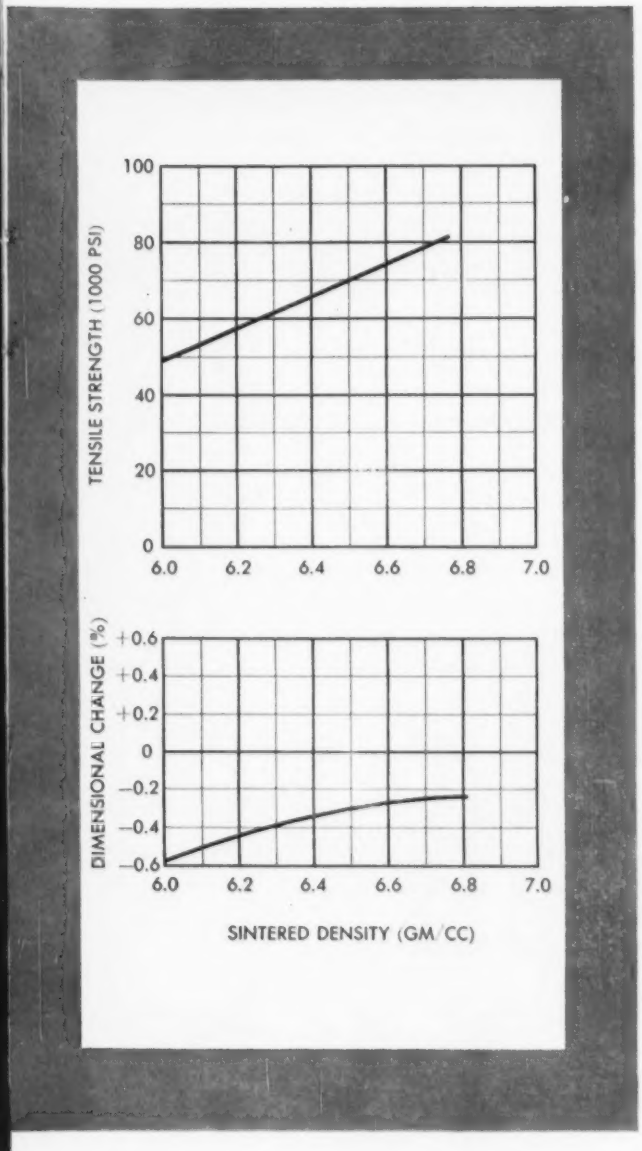
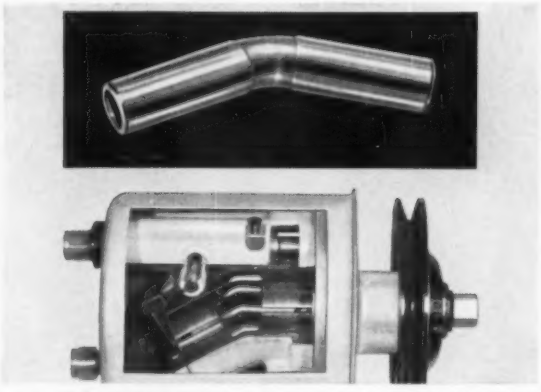
- Available in *production quantities* up to and including 12 tons, or in multiples thereof.

Republic Type 6460 Powder represents an entirely new, but thoroughly practical material for the powder metallurgy industry. It opens the way to new markets for new applications of **H**igher **S**tressed parts at lower costs.

Our metallurgists and engineers are ready to help you utilize all the advantages of Republic Type 6460 Powder. Just mail the coupon to obtain their services, or for technical data sheet on Type 6460 Powder.





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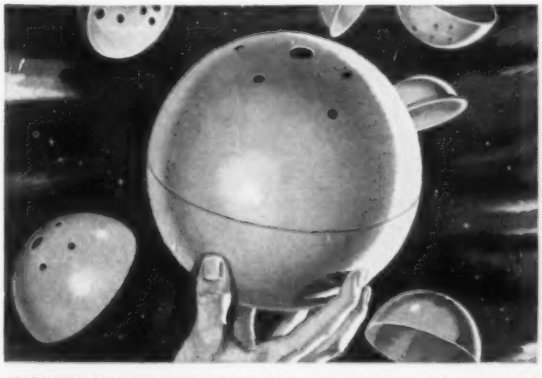

STRENGTH, LIGHTWEIGHT, CORROSION-RESISTANCE are advantages of Republic Titanium used in the manufacture of these hemispheres by Alloy Products Corporation, Waukesha, Wisconsin. Used for special aeronautical applications, completed spheres provide light weight without impairing safety; strength to contain 2,000 psi.; extremely high corrosion-resistance to chemically active contents. Beyond providing product advantages, Republic Titanium is easy to draw, pierce, and weld. Little change in fabricating procedure is required as compared with other construction materials. Send coupon for data.

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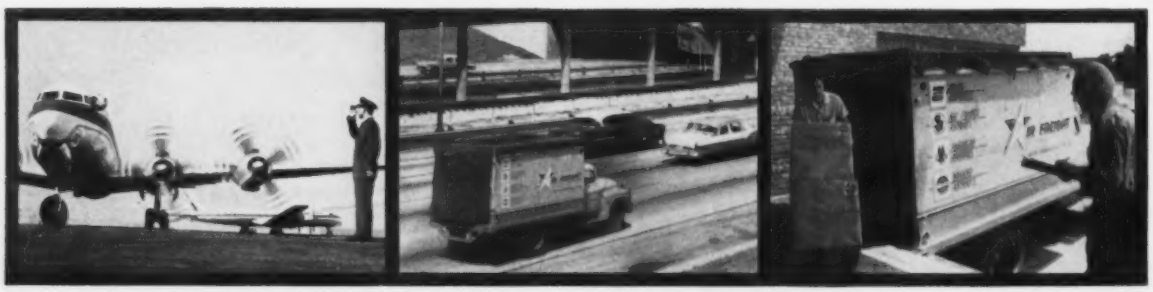

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The New

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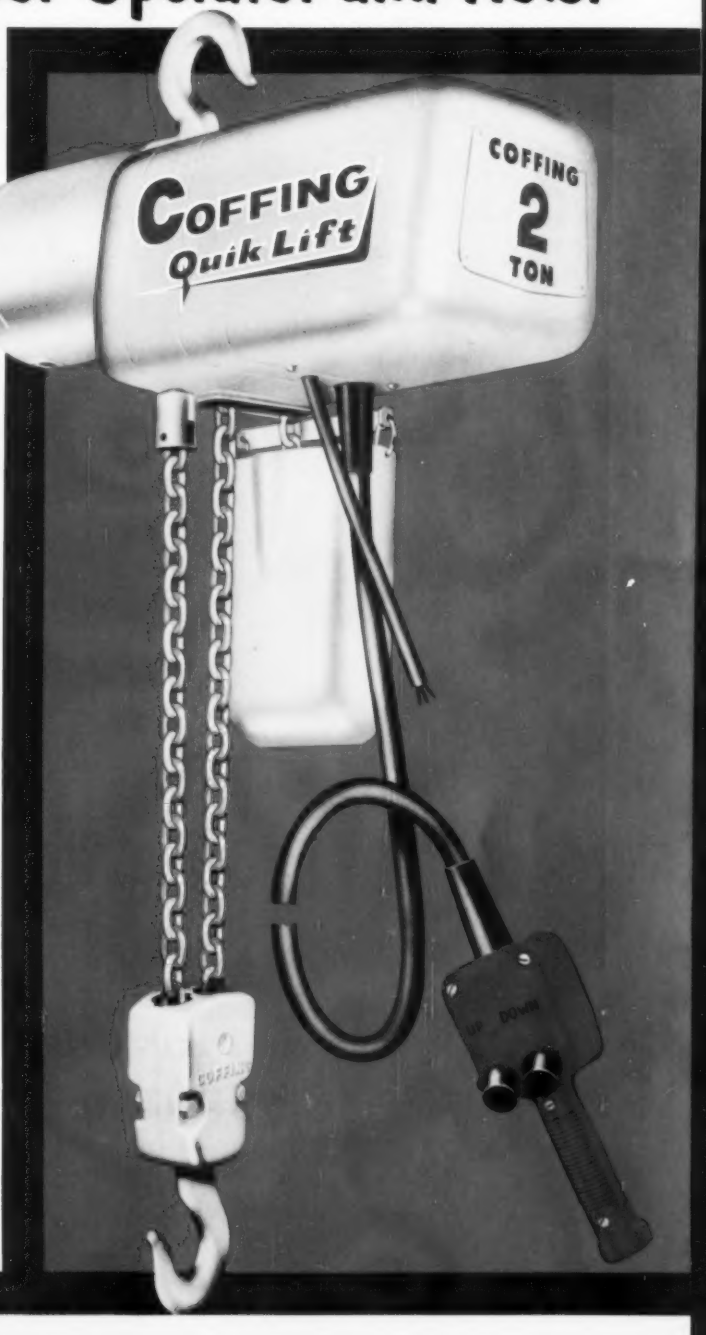
Quik Lift

COIL CHAIN ELECTRIC HOIST WITH PUSH-BUTTON CONTROLS

Protection for both operator and hoist is built into the new Coffing Quik-Lift coil chain electric hoist. Although lightweight, the hoist is very sturdy. The motor is designed to reject any dangerous overloads.

The mechanically interlocked push-button controls are mounted in a non-conducting plastic station, and control circuits are 115 volts, regardless of hoist voltage. The V-Type brake provides much greater braking surface than conventional brakes, and when lowering, additional braking is provided by the motor in the form of regenerative electric braking.

Safety has been kept in mind through every step of the Coffing Quik-Lift design. For complete information on how these hoists can bring new safety, convenience and flexibility to your hoisting operations, consult your distributor or write for Bulletin ADH-65.



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Sound to Inspect Castings

The research lab of a major automotive firm is working the bugs out of a sonic test for production inspection of castings. It operates by detecting individual resonances within each of several preselected frequency channels. Its developers believe it will be sensitive enough to detect the difference between voids and cracks.

Ready for Steel Trouble?

Smart purchasing men are already thinking about the possibilities of a steel strike next year. Rather than wait until the last minute, one plate user will begin in November to build inventory on a month-by-month basis. It may seem early, but users have been burned before.

Epoxy Resin to Oust Wood?

Soon to be released is an epoxy resin plastic that's a candidate to replace mahogany, impregnated wood, and laminated wood in pattern work, styling models and other tooling applications. Advantages are dimensional stability and absence of grain. It's impervious to moisture. One firm is prepared to turn out planks of the material similar to woods now available.

See Jet Plane Competition

Russia will become a large-scale exporter of commercial jet planes within a few years, trade experts predict. Some Western European governments say they're ready to sign up if the planes meet commercial standards and the price is right. In exchange, the Soviets want to import consumer goods and machinery to produce such items as household appliances and housewares.

Fix Standards for Pallets

Traffic men and shippers will soon be able to choose pallets from among 15 or so standard sizes instead of more than 100 sizes now in existence. A National Standards Assn. committee, working on the project, expects to come up with recommendations by the end of the year. Standard pallet sizes will make ordering easier and promise savings in re-use of pallets received with incoming shipments.

Cold Finished Bar Stocks

Users will do well to check their inventories and extend lead times on cold finished bar orders. While it's one of the last heavy manufacturing steel products to show an increase, some bar producers are upping production at a 25 pct per month rate. One reports that stocks of several sizes of bar have been wiped out in the past seven days.

Stainless Steel Expansion

Stainless steel production is snapping back. While the pickup is more noticeable with smaller specialty producers than major steelmakers, all are stepping up production. A leading Eastern producer has called back all laid-off workers and is now expanding its workforce. Producers, expecting aggressive selling to pay off, point out that plentiful nickel now makes such sales efforts possible.

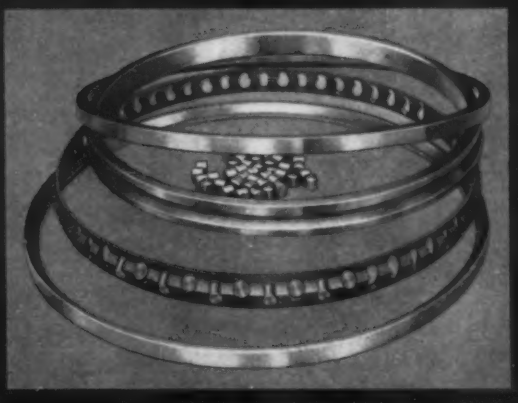
New Agency for Vanguard

New National Aeronautics and Space Administration will direct next Vanguard launchings. Four of these satellite vehicles await firing. While NASA didn't want Vanguard with its record of failures, other projects assigned to NASA take away some of the sting. These include million-lb thrust single chamber rocket engine, balloon-type satellites, and nuclear engine research.

Canadian Market to Gain

The entry of the first major Canadian bank into the installment buying market should mean a real gain in Canadian market potential. First effect will be to cut interest rates to buyers of consumer goods on time. Interest costs should be halved.

MESSINGER *Roller* BEARINGS



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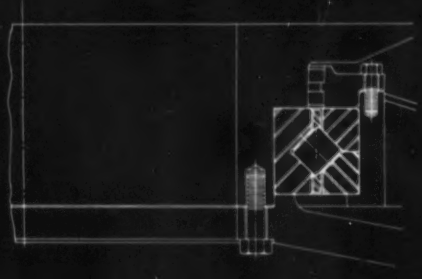

Military Services...

Radar screens for the nation's ground observer and detecting stations revolve around the clock on Messinger "X" Bearings. With their help, glass for our jet fighters is ground flat and free from distortion. They are used in gun mounts for AA artillery, requiring unfaltering accuracy and speed, and for our largest naval vessels where massive weights must be supported and handled quickly and easily. The diagram above shows an "X" Bearing applied to a vertical axis propeller.

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They provide improved productivity in steel mills and paper mills, on work rolls, levellers, suction rolls, press rolls, calender rolls, and in similar installations. Rock crushers and boring mill tables are other typical applications. Thousands of "X" Bearings are in service wherever critical and enduring accuracy is of paramount importance.

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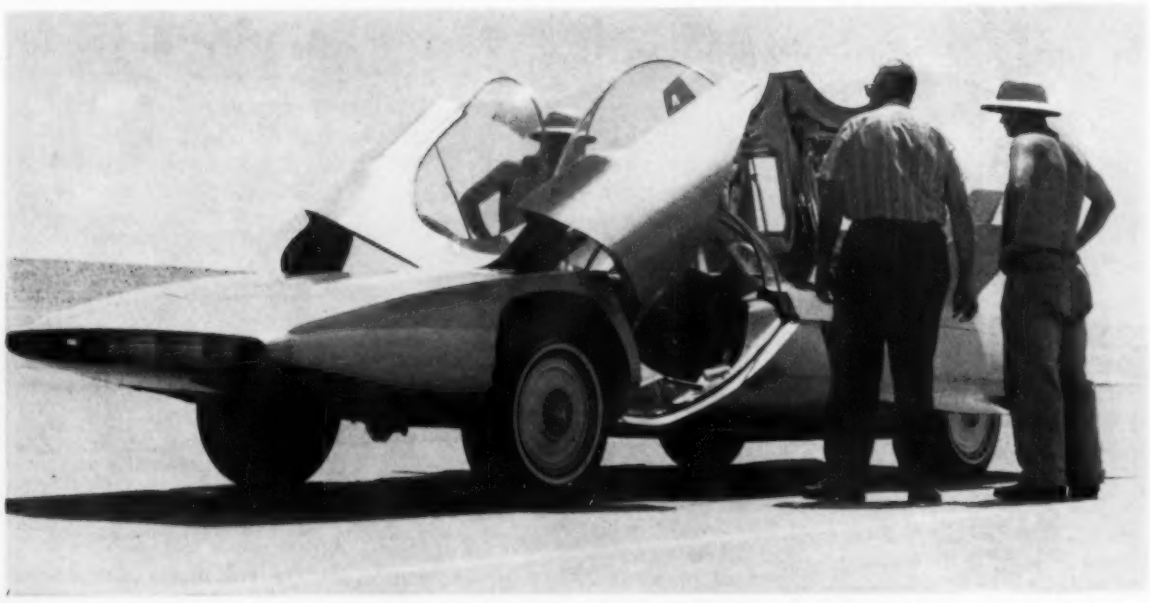


INTO THE FUTURE: GM's experimental Firebird III is symbolic of many changes coming in the auto industry.

Is Auto Industry Ready to Change Its Basic Car Concepts?

It won't come over night, but new developments now headed for production indicate basic changes for the auto industry.

Small car, aluminum engine, gas turbine, all point to radical changes.—By R. D. Raddant.

▪ Out of the auto industry's vast research and engineering facilities are emerging some of the most radical changes in auto history.

Some of these will mean major shifts in the automakers' concept of auto transportation. And with these come equally significant changes in manufacturing and materials selection.

Major Advances—The three major developments on the verge of breakthroughs are the small car, the aluminum engine, and the gas turbine. It's possible that the go-ahead has not yet been given to put any of these into production, but it's only a matter of time.

Most important to metalworking is the aluminum engine, not only as a tonnage market for aluminum, but also because it will bring in entirely new concepts in the handling of aluminum.

Changes Forecast—In terms of production, the light car will give a major boost to the unit body construction. Without the basic frame, the unitized body will place more stress on welding and structural rigidity, encouraging higher strength steels for greater strength at lighter weight.

The gas turbine, still a long way from mass production, will probably come out first as a low volume truck engine, with little immediate impact on the metalworking industry. But, if it should become a volume engine, it would mean an entirely different manufacturing layout from today's conventional engine plant.

Closer Controls — Emphasis on the cylinder block and head would give way to turbine wheels, heat exchangers and combustion tubes. Here is a great future for stainless steel and other heat-resistant alloys, with emphasis on wrought materials, little on cast. And the parts to be cast would require greater refinements with much closer emphasis on tolerances than in the past.

The overall direction of the auto

"We have the choice of keeping on improving what we have . . . . Or, it may be time for a radical approach."

industry is toward smaller parts running at greater speeds at higher temperatures. This will put more emphasis on improving the properties of materials, with closer inspection and quality controls throughout.

These are some of the general conclusions that can be drawn from these new developments. While details are still in the highly secret stage, they apparently are headed for production in a short time.

Auto authorities caution against writing off too soon any of the traditional concepts of the industry, both in product and manufacturing, in spite of the impending changes.

New Concept — But it's clear these changes challenge today's basic car concept. And the reasons go deeper than mere sales, although disappointments of recent years point to a change in direction.

A top research engineer recently confided this to The IRON AGE, as he looked across the broad expanse of the world-famous General Motors Technical Center:

"Sometimes I wonder if we haven't completed the big jump in the car as we have it today. The second steps are the hardest. We have the choice of keeping on improving what we have, which is becoming increasingly difficult. Or, it may be time for a radical approach."

Small Car Problems—The small car itself will mark a new approach for the automakers. It will bring greater stress on economy, both in cost of operation and initial cost. The latter, obviously, puts more emphasis on cost of materials and production.

To achieve economy of operation, cutting weight becomes the prime design problem. Although the aluminum engine would have made its appearance sooner or later, the small car hastened its advent.

With its own lighter weight, it will require less heavy supporting members, resulting in much greater total weight savings than in the engine itself.

Engine Decisions — While some of the trends in aluminum engines have been established, there are problems that have yet to be solved. The block may be a conventional aluminum casting, with ferrous or high silicon aluminum alloy liners, or it may be an entire block of high silicon alloys. These are decisions that the industry is still wrestling with.

The Chevrolet engine is a flat, air-cooled engine to be located in the rear. Ford's is reported to be water-cooled and will be located in the front. Chrysler, while not as far along, indicates its is convinced that the front is still the best location.

Hot Aluminum—The aluminum engine will mean significant changes to the foundry. Both Ford and Chevrolet have located aluminum foundries adjacent to producers, with the obvious intent of handling hot metal for engine blocks, cylinder heads, pistons, transmission parts, and other parts where aluminum may prove advantageous.

No one in Detroit will say whether the trend is toward diecasting, permanent mold, or semi-permanent mold. But engineers agree that the industry is pioneering methods of casting aluminum, with the new engines bringing significant advances in the handling of aluminum.

Development of new aluminum alloys, plus new casting techniques, is inevitably expected to increase the use of aluminum even further in auto manufacture.

Small or Light?—In line with cutting weight and cost, transmissions for the light cars will probably be simplified; probably won't perform all the functions quite as smoothly as late model transmissions.

Detroit's top men still persist in referring to their small cars as "light," rather than "small." There's a reason, other than an automaker's ingrained dislike for the word "small."

They are determined not to make a car that will look like just another European import. They are convinced that it has to be roomy, have comfort and utility.

Unit Construction — The small car will advance the cause of unitized body construction, which has already made advances in the industry. This means more emphasis on automatic welding and building structural rigidity into the car's body which loses its conventional frame.

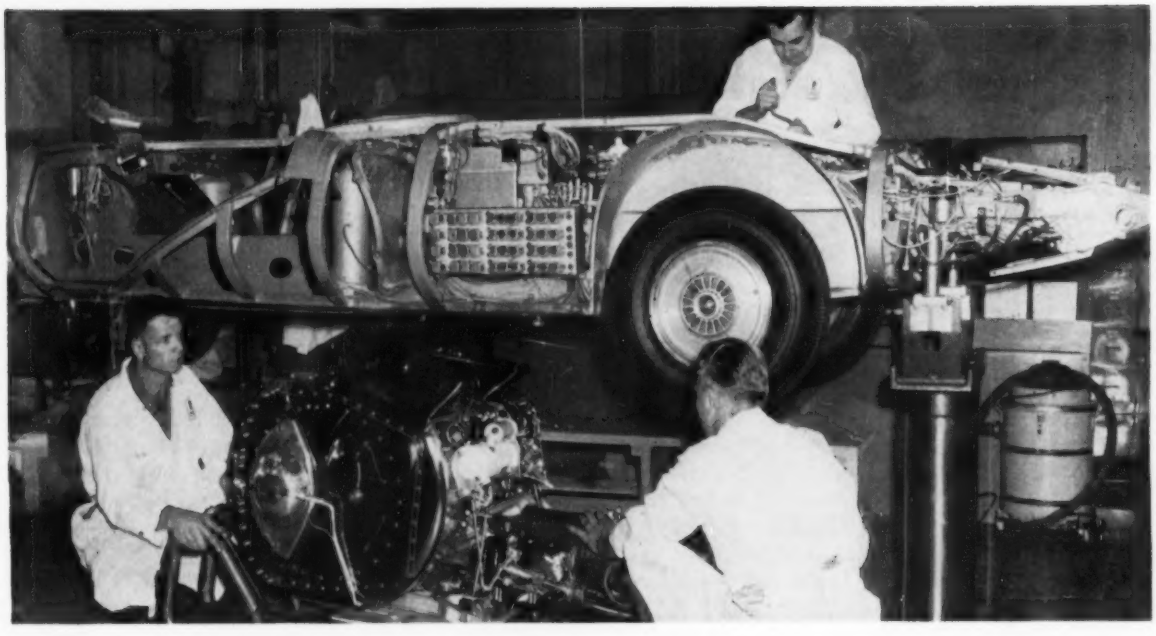
Where and When—You can get any guess as to when the small car will appear, but probably not within the 1959 model year. Some tooling has been placed, but not the flood of orders that had been expected. Automakers, with an excess of capacity now, are likely to make best use possible of existing tools and facilities.

And, it's remotely possible that the small car may never make it. The auto industry has been almost this close before and stopped. It's a step they are making with reluctance and a boom year in 1959 might change the picture.

The gas turbine has come a long way, but a little more slowly than some of its partisans predicted. But now it is on the threshold of a commercial application.

Gas Turbine Coming — Insiders predict that GM will be the first, with a gas turbine for truckers. The belief is that for a certain type of hauling—heavy loads over a long distance at nearly constant speed—the gas turbine can show definite economies.

Some believe that it will never



Where Do Electronics Fit Into Auto Picture?

▪ **Don't be surprised if your car of the not-too-distant future has a built-in speaker from which you will get audible warnings like "Speed limit 45," or "Slow down, curve ahead."**

This is just one of the possible uses of electronics in auto design. Electronics are already gaining their first auto use in applications that add to safety and convenience.

But it will be some time before electronics take over the main functions of driving. Reliability has not been developed to the full extent demanded for auto driving.

But weight and space saving possibilities are too great to be ignored. GM's Unicontrol, for example, where one short shaft and knob control the car's principal operations, offers such freedoms of styling and design that it may actively be pushed for production.

The experimental Firebird III, being assembled above, is loaded with electronic devices, including the Unicontrol and an electronic automatic guidance system. Electronic nerve center can be seen just forward of the left rear wheel. (Gas turbine engine is in process of being installed from below.)

Automatic guidance, where the car receives signals from a highway installed system, also may be closer than you think. On the superhighway, for example, the driver would place his car under automatic control at a preset speed, proceeding to his turnoff without touching the controls.

This is being pushed because many in the auto industry believe the time is coming when more cars will have to be moved at greater speeds than can be accomplished under conventional systems.

---

get out of specialized commercial applications. This would mean no mass production of gas turbines. But others disagree.

Chrysler Likes Turbines — "I think Chrysler has proven its faith in the gas turbine as a practical concept for passenger cars," says a leading official of that company. "We feel that it has definite possibilities in the passenger car field."

If it should become a factor, it would have a tremendous impact on the industry and its suppliers. For one thing, the industry has settled on few of the materials to be used in turbine parts. Stainless has the inside track for many parts, but the industry will look long and hard at other materials, some still in the laboratory stage.

This is one, but only one, of the many reasons why the auto industry is going heavily into basic research. Ford's Scientific Laboratory is a leading example. GM's Technical Center is placing more and more emphasis on basic research.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Automatic Warehouse on Its Way

The first completely automatic warehouse—like the rocket to the moon—is much talked about but yet to come. It is expected to be accomplished in the near future.

The Starting Point—

"It appears that automated warehouses will first occur in the field of manufacturers' distribution," predicted W. H. Meserole, a warehousing consultant, at the Joint Military-Industry Packaging and Handling Symposium. The reason. Manufacturers have fewer varieties of items to handle than do general distributors.

Two Constants—

While the fully automated warehouse has yet to make its debut, a Navy survey reveals there are a number of partly automated warehouses in the U. S. All have two factors in common:

1. Goods handled are of fairly uniform size or,

2. Operating costs are comparatively high.

The Limitations—

Says Mr. Meserole: "We know of no partially automated systems in which the goods handled are of great variety of size, shape, and weight or where the operating costs of the kind of business are characteristically low, or where labor costs are sufficiently high to . . . justify the tremendous investment of automation."

New Try at 'Containerizing'

The idea of shipping products in standard size containers isn't a new one.

It's never caught on because of inadequate handling equipment. Now the picture has changed.—By R. O. Schulin.

▪ After a dozen tries at "containerization" in recent years, and a dozen failures, material handling men are trying again to get this theoretically sound concept of moving goods to work. This time the experts think it will work.

Containerization is described as a system of moving materials by placing them in standard size containers. Ultimately, it would speed up shipping and greatly reduce handling costs.

Major Drawback Licked—At the Joint Military-Industry Packaging and Handling Symposium in Washington last week, the consensus was that the shortcomings of past efforts to containerize will be no problem this time. The major problem, lack of equipment, does not exist today.

"We had the containers but we didn't have the equipment at either end to load and unload these containers," explained R. H. Davies, vice president, Industrial Truck Div., Clark Equipment Co. Since the end of World War II equipment producers have come up with countless varieties of industrial trucks, conveyors, cranes, and other material handling devices.

Mr. Davies estimates that his company alone offers two billion combinations of models, motors, and attachments in its folk-lift truck line.

A Breakthrough — With these many material handling innovations available, there are signs that at least one transportation industry is accepting the containerization idea. Currently, steamship companies have orders pending for an estimated 25,000 containers up to 35 ft long for use aboard cargo ships.

The variety of equipment described by panelists at the Symposium backed up Mr. Davies' contention that there is equipment available on the market today that can tackle practically any material handling problem.

Some Examples — Jervis C. Webb, president, Jervis B. Webb Co., described a new driverless truck "Towveyor" made by his firm that can speed up material handling in plants and warehouses. The company has also been busy developing a new underslung crane for lifting heavy loads, power and free conveyor designs, and roller and flight conveyors.

Electronic Attraction — One of the new devices that drew unusual attention was the "Guideamatic," another driverless industrial truck that is controlled electronically. A. M. Barrett, Jr., president, Barret-Cravens Co., said the truck can be programmed to stop at any point along its route, blow its horn at corners.

Do Auto Contracts Assure Peace?

Many Union Grievances Are Still Unsolved

Marathon talks between automakers and UAW result in new pacts with GM and Chrysler.

But before promised "three years of peace" begin, issues at local union level must be settled. —By H. R. Neal.

▪ Separate around-the-clock marathon sessions finally resulted in settlement of contract negotiations between the United Automobile Workers and General Motors and Chrysler Corp.

Last week's settlement did not bring immediate peace to the auto industry nor a return to production. But it did establish the price of peace in a recession year — and, compared to previous years, the auto industry has a bargain-priced package.

For the first time since unionization of the industry, the automakers may have managed to best the UAW. At the same time, the union is able to offer its members a contract expected to meet with majority approval.

Smoldering Issues — But before the "three years of peace" promised by the new contracts can start operating, GM and Chrysler have to get their workers back on the job and remaining issues settled.

Chrysler, particularly, faces problems in this area. The former Briggs workers have shown widespread dissatisfaction over the contract and have accused the union of "selling us out." And the company still hasn't reached agreement with some 8000 office workers and engineers. Settlement with this latter group is a must before the contract becomes effective. General Motors and Ford each have a number of plants with long-smoldering, unsolved grievances.

Signing of the contract is not necessarily going to ensure a peaceful three years for the automakers.

Follow Ford Pattern — General economic provisions of the two latest contracts are patterned after the three-year Ford agreement signed three weeks before. Cost of the Ford settlement is estimated at 9 to 9.5¢ per year—far short of the "biggest package ever" promised by UAW Pres. Walter P. Reuther.

Only GM had to increase the ante slightly in order to gain a contract. Chrysler gained significant, to them, concessions from the union while giving nothing in return. Union Leader Reuther showed he, too, could "give" in give-and-take bargaining and that he can recognize the economics of business.

Bargaining Weapons — In the final 36-hr-long sessions, GM and the UAW hurdled thousands of local grievances and demands, leaving them to be worked out at the local level by an Oct. 20 ratification deadline. Meanwhile locals have the right to continue the strike—GM's first complete shutdown since its epic 113-day strike in 1945—to bolster their bargaining position during this period. However, these must be settled by the ratification deadline or negotiations must start all over again—a situation GM's weary chief negotiator, Personnel Vice President Louis G. Seaton, said he "preferred not to think about."

Minor Differences — Major changes in the contract agreed to by GM are actually minor in nature and should cost no more than about seven-tenths of a cent over the Ford pattern. And none set new precedents.

Most significant of these is a step toward elimination of wage differentials in GM plants — a thorny problem which plagued negotiators for months.

First to be affected by the agreement are four Chevrolet and two Fisher Body plants. Employees in certain classifications will be given raises over and above those provided in the master contract as a move toward equalizing wage rates.

PRELUDE TO 'PEACE': Incidents like this preceded contract settlement between General Motors and Autoworkers. Big question now is whether unsolved "minor" issues at GM and Chrysler will cause trouble.

Forget About Price Stabilization

Survey Predicts Increases in Metal Prices

There's little chance metal prices will level off in 1959 or the years following, a large manufacturer believes.

Forecast: A 5 pct average increase next year and a rise of 17 pct in the next five.

Also expected soon: Boosts in primary aluminum and copper, and in brass mill extras. — By G. J. McManus.

■ Steel prices will go up $6 a ton next July. Aluminum prices will rise at least 1¢ a pound by the end of this year or shortly after. Brass mill extras are due to jump any day now.

That's the way it looks to one large manufacturer. The company's purchasing department has charted the price behavior of major industrial staples, starting with a 1947-49 base and continuing on through 1963. Figures are based on a particular purchasing mix but they are broad enough to provide a general guide for most plants.

No Price Leveling — According to the survey, price stabilization is a nice thought that hasn't taken hold in the last 10 years and probably won't in the next five years. Prices aren't going to level off. A composite of metals, power, and 13 others shows that industry is paying 49 pct more today for the things it buys than it did 10 years ago.

The composite price is due to jump 5 pct next year and 17 pct in the next five years.

Costs Are the Key—Survey figures are based on year-end prices. At the moment the projections of copper and aluminum prices for this year are higher than actual levels. But these are special cases, tied to world markets. In the over-all picture, the current year has shown that costs rather than market conditions are becoming the major factor in pricing.

As an example the survey projected lower prices this year for metalworking equipment and electrical machinery. Both have exhibited price weakness in past periods of slow demand. Orders for both fell off this year but prices have climbed over last year's December levels.

"To a growing extent, companies are determined to recover their costs," says a price analyst.

Straight Line Movement — Another interesting point: Long-range price curves are remarkably straight. A market dip may drop prices off line for a short period but they tend to spring back a compensating amount. A tight market next year would probably bring sharp increases in industries that feel they were short-changed this year.

In line with this thinking, aluminum prices could regain their 1957 levels by the end of this year. They can be expected to go up 3-4 pct next year.

Copper Outlook—Copper prices are the least formful of any industrial charges. They are well below the survey projection this year; but the analysts point out that copper products are not completely independent of costs. Over a period of years, the trend lines of copper prices and brass mill wages follow similar upward paths.

Ultimately, cost pressure has got to affect even copper. One analyst looks for the price to hit 28¢ by December and average 30¢ for 1959. The same source looks for an early increase in brass mill extras, and for a copper price of 32¢ by the end of next year.

Steel Boost of $6?—Steel prices will go up more next year than this. For a mix that is slightly richer than the average industrial take, the survey projects a hike of $6 a ton. That would be $1 more than this year's increase as applied to the company's steel buying. Steel extras may go up but the chances of a rise before the end of this year are considered remote.

Among the products with price problems are non-structural fabricated metals (stampings, bearings, hardware and others.) Prices of these have gone up only 45 pct since 1947, which is well below the gains for aluminum and for ferrous metals. In the three years following 1951, fabricated metals showed practically no rise. This year they are down. A 5-6 pct jump is predicted for 1959.

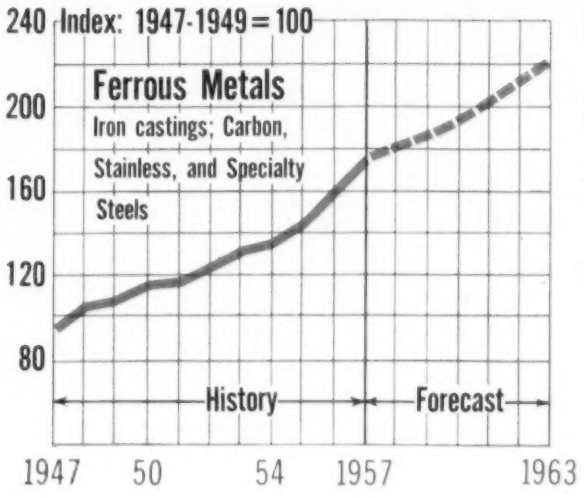
Steadying Influence — In some cases, price indexes fail to consider increases in value. For example, prices of electrical machinery have risen about 50 pct over the 1947-49 base. Yet utility prices have remained constant or dropped. In other words, the technical improvements accompanying price increases have helped keep price of the end product constant.

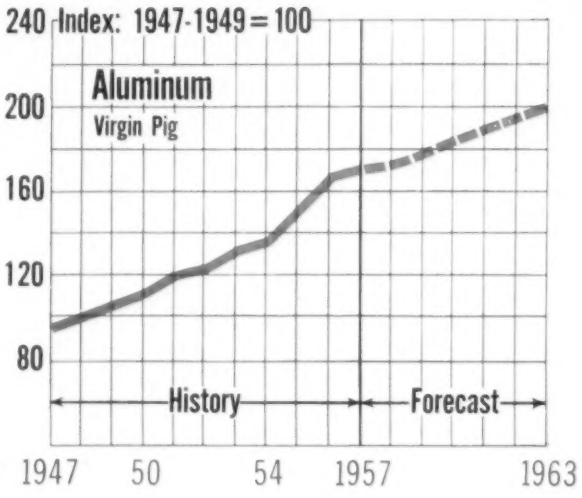
There is no simple formula for price forecasting. The predictions covered here are partly based on past statistics. In some cases, data on the future was available. The three-year steel contract helped in predicting this year's steel price increase almost to the penny.

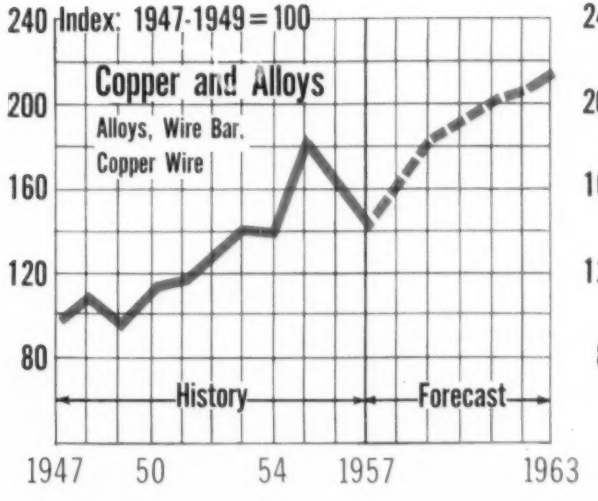
What to Consider—But known factors must be balanced against unknowns and intangibles. Predictions for 1959 take into account the fact that strong government pressure will be applied to hold down prices. Copper's outlook is tempered by stocks of 683,000 tons.

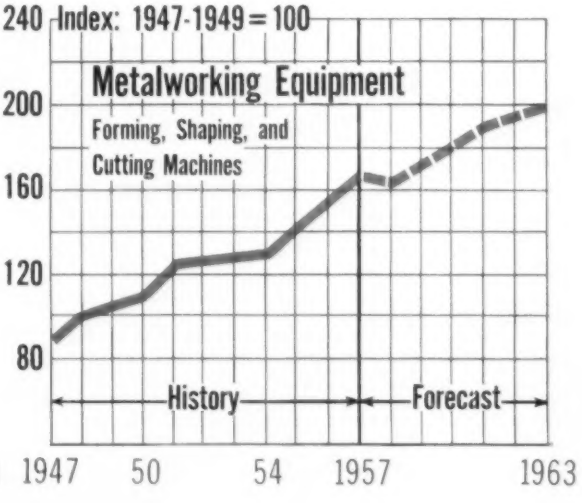
The big element is wages. Analysts look for the wage curve to continue upward and for prices to move with them.

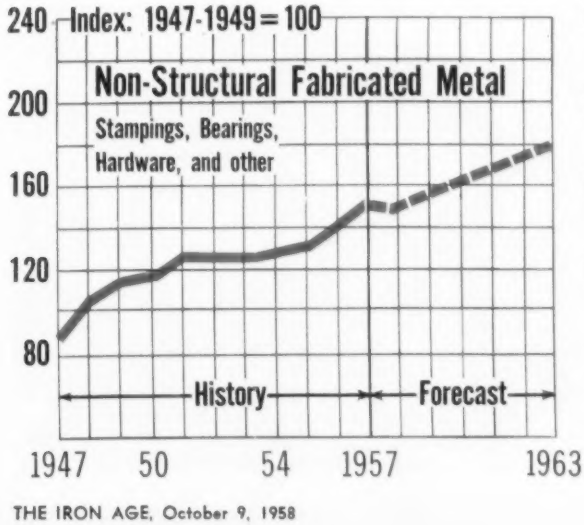
Metalworking Prices: The Trend Is UP

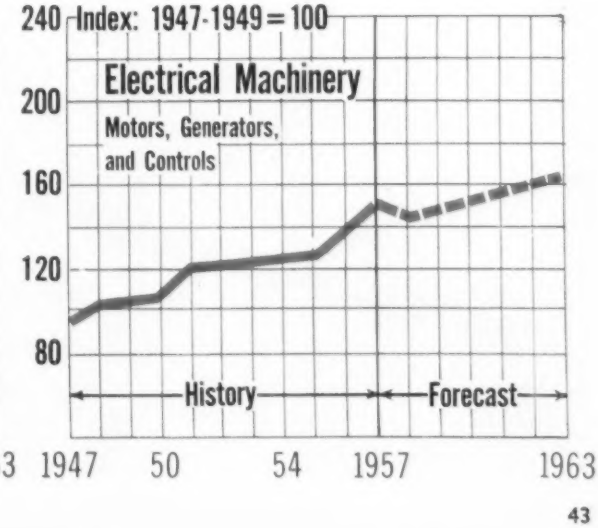












More U. S. Dollars Head North

Canada will lure $1 billion from U. S. industry in 1958, despite the recession.

Here's what U. S. investors see that makes them anxious to set up shop north of the border. —By K. W. Bennett.

▪ With Ontario as the main target, U. S. business is making some big plans for investing in Canada. And the slow rate of recovery from the recession is not making any difference.

In the last 60 days at least four major U. S. corporations have indicated, privately, the plants they will build in Canada will be twice the size originally planned last year.

A major oil driller is telling bankers that 70 pct of his 1959 exploration dollars will go north of the border.

A U. S. mining concern has earmarked 65-74 pct of its 1959 property-buying budget for the same area.

Who Is Interested—A Canadian investment banker, who has watched U. S.-Canadian dollar relations for over 20 years, remarked last week, "I'm amazed at the eagerness U. S. firms show at moving into the Canadian market. Many of the inquiries we've been receiving lately have come from manufacturers, so it isn't just ore and oil development. We've repeatedly had three- or four-day visits by marketing men from your firms. And my banking competitors are saying the same thing."

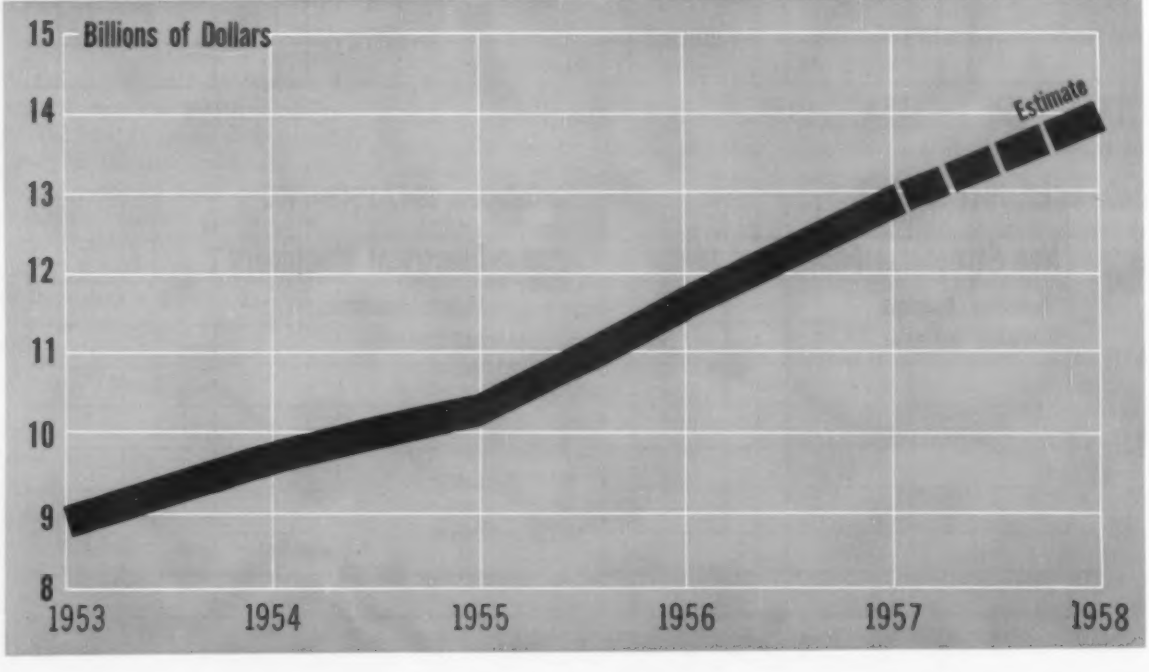
The president of a U. S. metalworking firm confirmed, "We know that we need to step up our role in the Canadian market."

How Much—In a recession year, one billion American business dollars will go into Canada. And at the present rate, this figure could be conservative.

Why the concentration on Ontario? It's Canada's top metalworking market area. Roughly 95 pct of Canada's motor vehicle parts are manufactured there, as are 82 pct of motor vehicles, 75 pct of heavy electrical machinery, 78 pct of her iron and steel. Over half of Canada's output of aircraft, aircraft parts, castings, electronic equipment, industrial machinery, sheet metal products, brass and copper products, come from Ontario. About 90 pct of Canadian farm equipment is built there. Ontario manufacturing output has gained 185 pct in the '46-'56 decade to total 50 pct of Candian output.

Telling Her Story — Ontario is zealously seeking U. S. industry. The province operates information offices throughout the U. S. Last year it published its own directory of manufacturers needed in Canada, and a revised edition will hit the information racks Nov. 15. The

Our Growing Investment in Canada



province has set up nine regions, each with a manager to supply manufacturing newcomers with data on wage rates, fuel costs (Canada's electric power costs are among the lowest in the Free World), transport availability, taxes, water supply.

How Well Does It Work?—Capital spending in Ontario rose 14 pct in 1957. In that province, 34 pct of Canada's population earned 40 pct of Canadian income. Ontario captured 45 pct of total Canadian manufacturing business in 1956, 47 pct last year. Despite the Canadian recession, which began in the spring of '57, work was begun on 524 new plants, branch plants, or plant additions. Briefly, Canada is expanding industrially faster than the U. S., and Ontario is expanding faster than the rest of Canada.

Comeback — Canada's rebound from the '57-'58 recession has been a spur to conservative U. S. investors. Canada's gross national product has risen 29 pct since '54. The U. S. gained only 20 pct. Yet the recession business drop was only 7 pct in Canada—compared to 13 pct in U. S. In fact, Canadian exports rose slightly during 1957.

O. J. Firestone, Canadian economist, puts it this way: "The fact that our recession is shallower is in line with experiences we have had in three previous recessions. The decline in industrial production amounted to 9 pct in the 1937-38 recession in Canada, and 34 pct in the U. S.; in the 1948-49 recession, 5 pct in Canada, 11 pct in the U. S.; in the 1953-54 recession, 5 pct in Canada, and 10 pct in the U. S."

Export Advantages — To U. S. metalworkers interested in export sales, Canada, and particularly Ontario, looks fine. U. S. companies setting up a sales subsidiary in Canada can ship goods into the Sterling Block countries at reduced tariffs. In addition, the Canadian government insures payment of shipments of Canada-produced export goods into almost any country. It amounts to a government subsidy of manufacturers' capital that might otherwise be tied up over long periods.

Sold!

To the USSR for $19,040!

Russia has now proved how ridiculously easy it can be to break a market.

And she'll do it again unless we do something.

▪ The Government of Bolivia ran a full page advertisement in the "New York Times" last week that shocked many Americans. It described how one of our finest southern neighbors has been brought to the brink of ruin by Russian tin dumping.

The story is simple but fantastic. Like other tin-producing countries, Bolivia contributed money to the International Tin Council's "buffer stock." The manager of the buffer stock was obliged to buy tin on the world (London) market whenever the price dropped to a certain point. At this point the seller could still make a profit.

Russia refused to join the Council, dumped tin on the world market at the profitable "floor" price and forced the Council to buy and buy and buy. Soon all the contributed funds were exhausted.

Then, about three weeks ago, the Kremlin delivered the coup de grace. By offering some 85 long tons at about 9¢ to 11¢ a pound under the market the Russians broke the tin market. An experienced tin broker called it "the worst price break I've ever seen."

Bolivia had to shut its mines. "This," said the Bolivian Government, "could mean the eventual collapse of the Bolivian economy, leading to a second phase of Communist attack; undermining the present government by poisoning the minds of a poverty-ridden people and finally, into the third stage, overthrowing the government and taking control!"

Over the past four years, the United States has given Bolivia more than $100 million in aid programs.

For something like $19,000 the Kremlin has been able to bring the Bolivian economy to its knees!

Question: Do we have to continue to take things like this lying down? Couldn't they be avoided with some central organization and planning — by a group that recognizes that this is economic war to the death?

John L. Burns, president of Radio Corporation of America, has suggested creation of a fourth branch of government to be made up of top-ranking leaders from many fields to conduct long-range planning on every cold-war front.

At about the same time, and unaware of Mr. Burns' proposals, The IRON AGE suggested creation of a top-level commission to assess the Soviet economic threat and suggest means to counter it.

Last week H. A. Toulmin, Jr., board chairman of Consolidated Engineering Co., called for formation of a U. S. Industrial General Staff to cope with the stepped up tempo of Communist competition in virtually all areas of free-world trade.

If you agree that time is running short, write your Senator or Congressman—or write us. But let's get going. **G. F. Sullivan,** Editor.

How Worthington Wins Overseas

Rigid Standards and Quality Products Are a Help

Worthington's foreign plants and distributors earned $1.3 million last year.

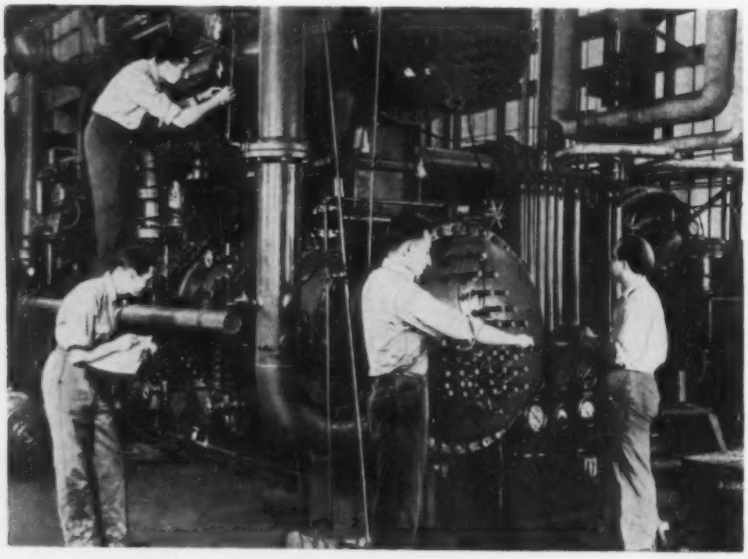
Close look at how it's done may be valuable for companies thinking about operating overseas.—By G. G. Carr.

▪ If you're considering an overseas operation, take a look at Worthington Corp.

Its network of foreign plants and distributors last year earned $1,265,000. That's equal to an additional 83¢ per share if reported on a consolidated basis. In addition, dividends, engineering fees, and royalties totaled $1,080,000. Total shipments for offshore plants were up 20 pct and sales were up 8 pct. So far this year, earnings are at an annual rate of an additional $1 per share.

Worldwide Operation — Worthington's operation is truly worldwide, with plants in 12 countries, sales and service offices in 73, and a total of 180 distributors. Six associated companies are in Europe —Austria, England, France, Germany, Italy and Spain. In Latin America the company manufactures locally in Argentina, Brazil, Colombia, and Mexico. In addition, each foreign office doubles as a sales and service agency for all Worthington products.

Fit to the Times—The firm insists that product quality is the most important reason for its success against fierce competition in foreign markets. Executives add that Worthington's line of heavy industrial equipment is suited to the rising tide of industrialism in so many parts of the world. Comments one: "The old idea that agricultural nations would be better customers for manufactured goods than industrial countries just isn't holding up."



INTERNATIONAL TRAINING: Engineering research is an important part of Worthington's international student training program. These foreign students are studying an experimental air conditioning system.

At present, Worthington imports no off-shore components to this country, but admits that day may come. "Already, foreign affiliates are competing with exports from our U. S. plants in many areas, notably South America," a spokesman says.

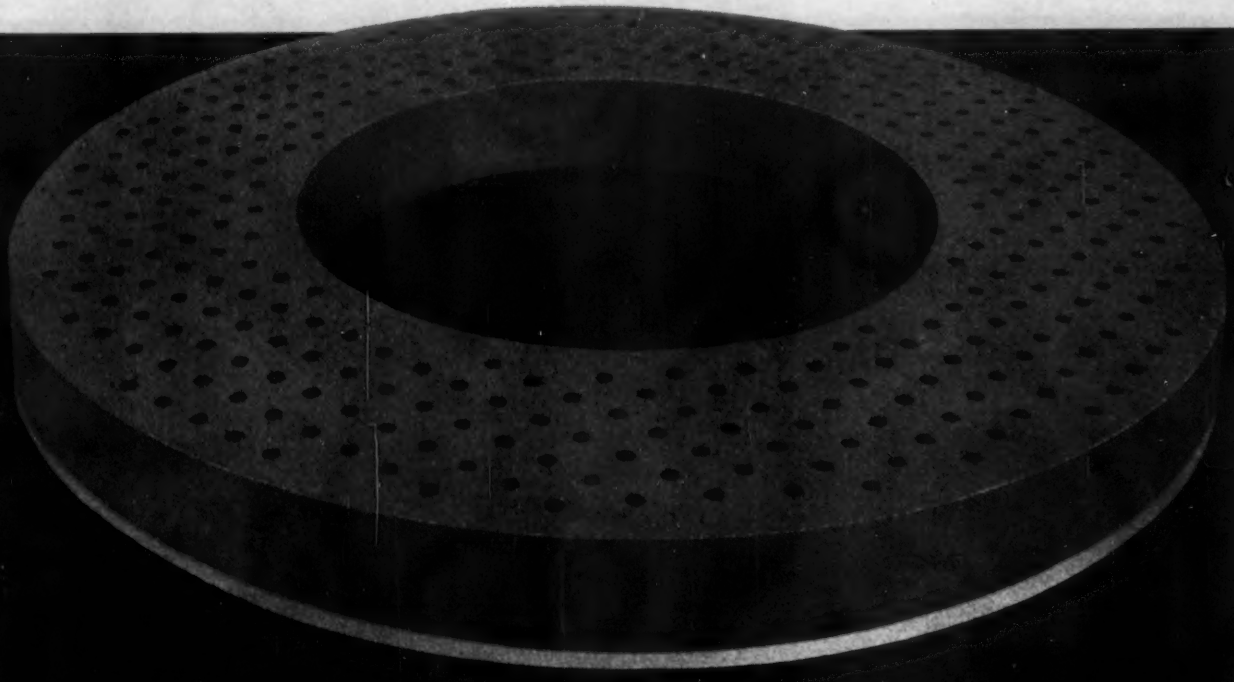
Same Basic Products—Products of foreign plants are basically the same as American prototypes. They are adjusted to local requirements as needed. Emphasis so far has been on adaptation, with few if any new products developed overseas. While foreign divisions are free to introduce any changes they think desirable, final okay must come from Worthington's New Jersey headquarters. This insures that all changes are in accord with latest design and production developments.

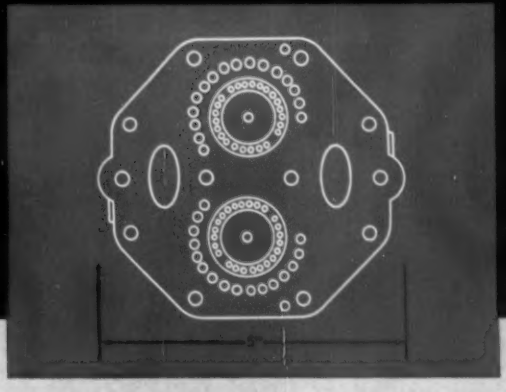
The company insists all foreign plants meet the same engineering and production standards as its American plants. It has operated since 1920 an international training program in the U. S. for engineers from foreign affiliates. The company admits, however, that compromises are sometimes unavoidable.

Material Problems — Consistent quality in raw materials and components is a major problem, as is quality control during manufacture. This is sometimes due to inexperienced workers, and sometimes to inadequate machinery. Many foreign countries make it virtually impossible to import machinery even when suitable tools are not available locally.

Native personnel is used wherever possible as a matter of policy, an approach frequently reinforced by foreign laws. But Worthington keeps a certain number of American executives at each installation.

Gardner engineered abrasive improves finish in lapping operation from 12 to 4 RMS





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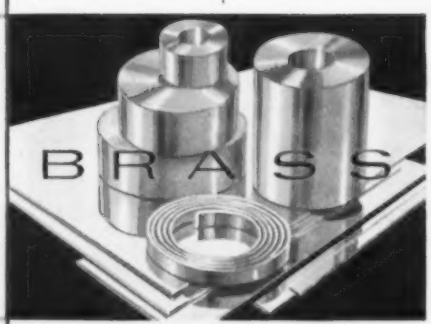

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IRON AGE Editor Predicts Steel Market

▪ Many steel users who this week feel they have all the steel they need —and can get more any time they want it—may be quite disappointed later this year—and even worse off by next spring. This is what Tom Campbell, IRON AGE'S editor-in-chief, told a joint meeting of the Sheet Metal Distributors Assn. and the National Wholesale Hardware Assn. at the National Hardware Convention in Atlantic City.

Campbell warned that already deliveries are being extended for hot- and cold-rolled sheets, bars, tinplate, and galvanized sheets, with the probability that cold-rolled sheets will be harder to obtain as the auto industry steps up its order volume.

Warn Some Buyers—"While we will have no steel 'boom' or shortages such as we had a few years ago, the hand-to-mouth buying policies of some users will put them in a bad way competitively," The IRON AGE editor-in-chief asserted.

Steel operations in this quarter will easily reach 75 pct of capacity and that level will be exceeded for a few weeks, Campbell predicted. Reason for this optimism, the editor said, was the general feeling of "better business" among steel consumers other than automotive.

Campbell pointed out that the advance in the steel rate from 47 pct of capacity last April to an expected average of 75 pct or slightly more in the fourth quarter could be considered a rapid recovery even though the rate will not hit 100 pct. "It may be next June or later in 1959 before the steel rate reaches 90 to 95 pct," Campbell said.

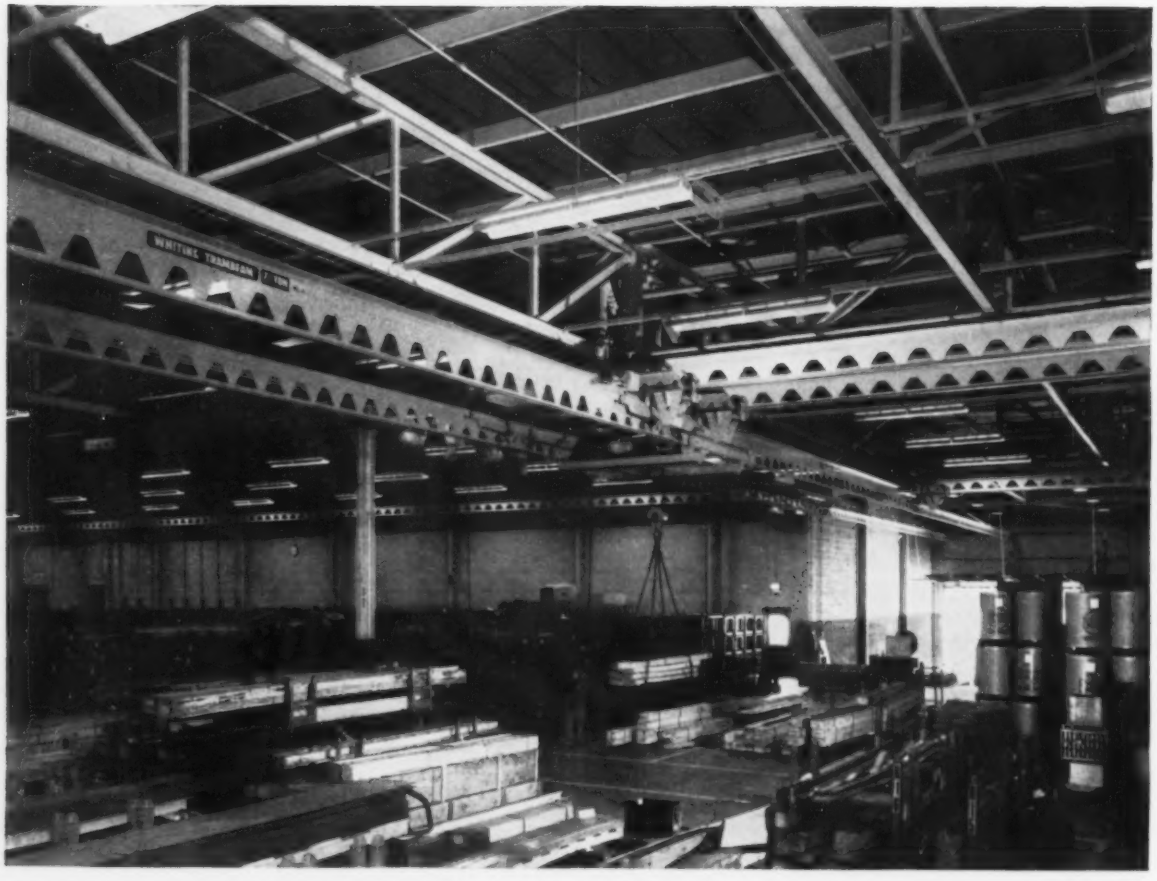
Union—"We look for a tough bargaining session between the Steelworker's union and the steel firms," The IRON AGE editor said. "Furthermore, there is more than a 65-36 chance of a long and bitter steel strike," he added. Union officials are adamant in demands for higher wages and fringes while the steel firms are just as strongly opposed to granting raises and fringes which would force another compensating steel price increase. "The result," Campbell said, "could be a strike which might last as long as 6 to 8 weeks."

The speaker did not look for any sharp upward surge in steel business of "boom" proportions until next April or May when many steel users will become aware of the impending labor hassle. He warned his listeners that, as in the past, many of them will be unprepared for a steel strike because they will let their steel inventories slide to a point insufficient to support their own operations while a strike is on.

Strike Cost — If and when the strike comes, after July 1, 1959, there is a possibility that more than 16 million tons of ingots will be lost temporarily, The IRON AGE editor said. "This tonnage will have to be made up, so we look for a strong operating rate in the last quarter of next year; perhaps running as high as 90 to 95 pct of capacity," Campbell added. "It is my guess that the steel industry will make close to 110 million tons of steel ingots next year and this allows for any work stoppage that might occur," The IRON AGE editor predicted.

Win Awards for Powder Metal Rolling Process

WINNERS: New methods and equipment to roll high quality strip out of metal powder turned out to be the road to recognition for Ralph J. Perrine (left), Electric Furnace Co., and Richard A. Smucker, E. W. Bliss Co., both of Salem, O. They won the Fifth Annual Pressed Steel Award for "opening for members of the stamping industry new applications and new opportunities to stamp parts which previously had to be manufactured by some other methods." It was presented by Carter C. Higgins, president, Worcester Pressed Steel Co.



How overhead handling saves space

Automatic Electric, winner of an award for one of 1957's best ten new plants, uses Whiting Trambeam Overhead Materials Handling Systems. A Trambeam Crane System moves finished products from packaging and crating area to temporary storage in the shipping room. Result: aisle space is minimized – total cubic space is more effectively utilized.

In the receiving and storage areas four 7½-ton Trambeam cranes run on 660-foot runways to move as much as five million pounds of raw materials per month to communications equipment production lines, efficiently and economically. Additional Trambeam Systems help the plating and other departments to maintain high-gear production. Find out how *your* plant can boost production, cut operating costs, and make full use of floor and overhead space with a Trambeam Overhead Materials Handling System. Get the facts today.

IDEAS TO CUT YOUR COSTS

"Trambeam Saves Space at Automatic Electric," contains actual installation photos of Trambeam Overhead Materials Handling Systems at work, and suggests where other companies can apply them to save space and reduce expenses. Get your copy NOW. *Whiting Corporation, 15601 Lathrop Avenue, Harvey, Illinois.*

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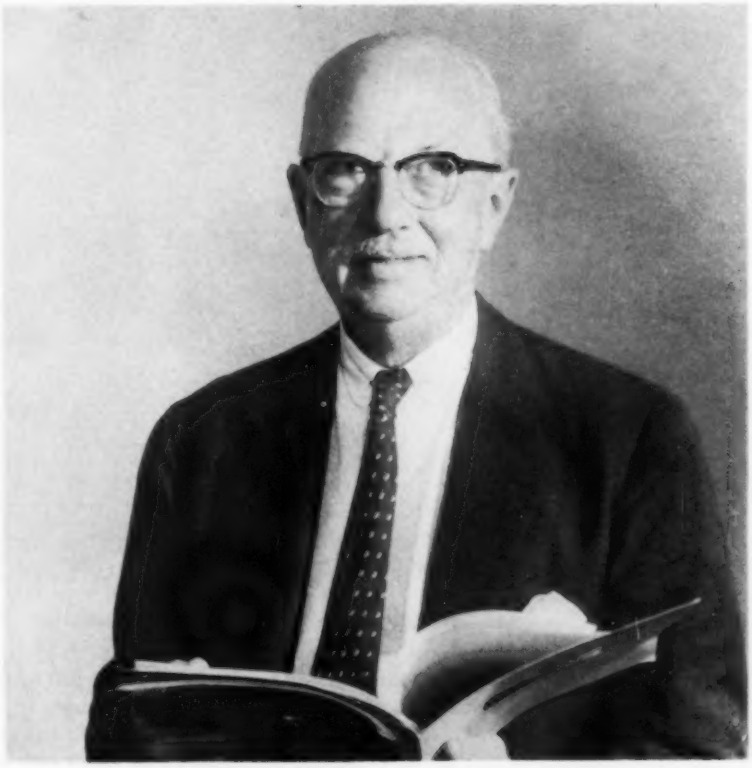
McClure Kelley

The Man Who Reshaped a Giant

A one-time lawyer who chose to work with tangibles, Mr. Kelley re-made B-L-H Corp.

His hard-headed notions about fiscal management play a large part in the firm's success.



McCLURE KELLEY: Keep solvent and stick to your objectives.

▪ There are few tougher management assignments than reorganizing a major corporation. This was the job that confronted McClure Kelley when he became president of Baldwin-Lima-Hamilton Corp., Philadelphia, in 1955.

He was selected for the presidency by Board Chairman G. A. Rentschler, who was looking for a vigorous, courageous executive to carry out a modernization program. It was a job that had to be done if B-L-H was to survive.

A Fresh Approach—Mr. Kelley qualified for the job with his outstanding record as president of Austin - Western, a construction equipment producer now part of B-L-H.

A $200 million firm, B-L-H has nine manufacturing and engineering facilities in six states. It employs over 9000.

He Goes to Work—When Mr. Kelley took over, he found himself running a company that was renowned for a product it could no longer sell—locomotives. He found a company that was little known for many important products it did make, such as heavy machinery, measuring and testing equipment, to name a few. He also found a company with extensive plant and facilities that could no longer operate at a profit.

Seizing the managerial sword, he began to cut Gordian knots. Through hails of epithets, criticism, and dire predictions of ruin, he proceeded to overhaul plant and personnel.

Products Shuffled—He pulled together loose strings in the firm's far-flung subsidiaries and coordinated their operations. He put the company into industrial fields that were growing and got it out of fields that were stagnant.

An attorney turned executive, Mr. Kelley left the legal profession many years ago to become credit manager for an Aurora, Ill. firm that later became Austin-Western. While working his way up the executive ladder via the financial route, he developed a philosophy: Keep solvent and stick to your objectives.

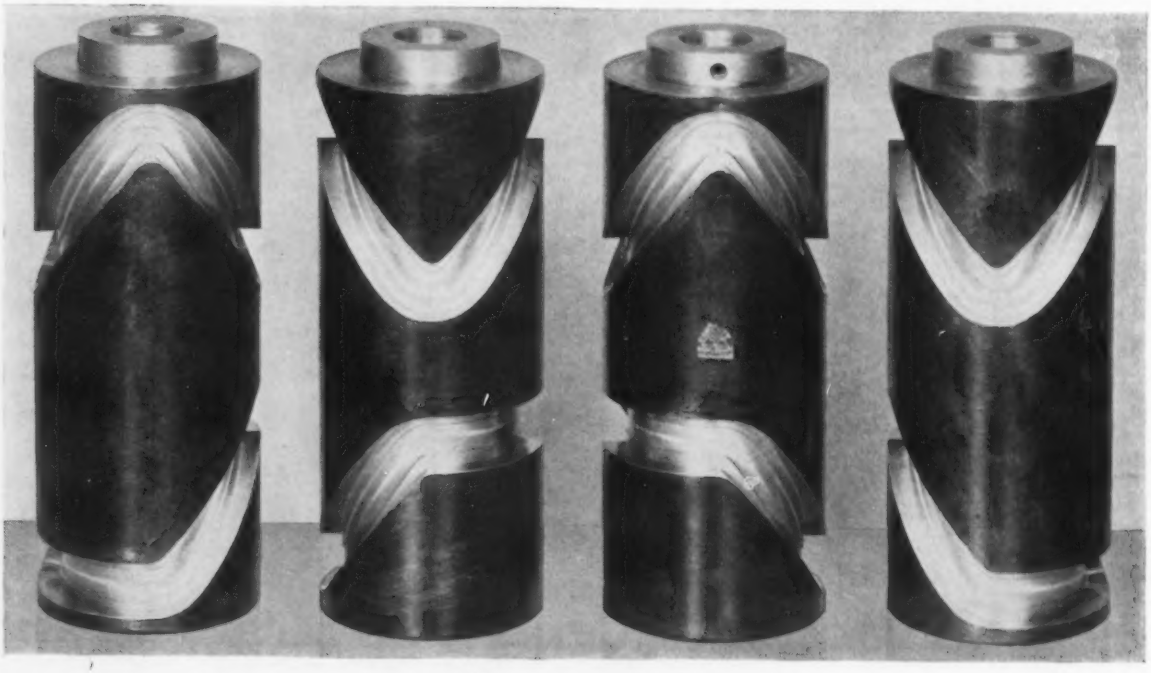
Solvency Achieved—AT B-L-H he has disproved a popular notion in the financial world that great debt is a good thing. Debt, Mr. Kelley believes, hampers a company's flexibility.

The company had no bonds or mortgages when he took over, but it did owe $20 million to banks. Today, it owes the banks nothing.

To the people at B-L-H quiet, deliberate McClure Kelley has performed something of a miracle in breathing new life into an ailing, multi-million-dollar corporation.

"We produce better cams at lower cost with GRAPH-MO® steel"

...says L. G. Schlecht & Son, Inc.



TO make cams of all types—some small, some large—and produce them better at lower cost—L. G. Schlecht & Son, Inc., chooses Graph-Mo® steel. Developed by the Timken Company, it's a special oil hardening tool steel that machines faster and easier than ordinary steels. Result: machining time and production costs are cut.

Graph-Mo wears longer, because of the combination of free graphite and diamond-hard carbides in its structure. Users report it outwears other tool steels 3 to 1! What's more, Graph-Mo responds uniformly to heat treatment, minimizing distortion—saving time and money on the trickiest, toughest jobs. And it has minimum tendency to pick up, scuff or gall.

Graph-Mo is one of four graphitic tool steels developed by the Timken Company. They have many uses in producing machine parts, dies, punches and gages . . . giving a better product at lower cost. For more information, send for the Timken Company's Graphitic Steel Book, or call or write our engineers. The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO".

Timken graphitic steels are carried in stock by 9 distributors with 42 warehouses in 31 cities in the United States and Canada.

See us at the 40th NATIONAL METAL EXPOSITION AND CONGRESS
Cleveland Public Auditorium, Cleveland, Ohio, October 27-31, Booth 1051

TIMKEN *Fine Alloy* STEEL

TRADE-MARK REG. U.S. PAT. OFF.

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS STEEL TUBING

Get Ready for Inventory Buildup

Indications are that purchases of materials still lag behind rate of consumption.

This means inventory buildup hasn't hit yet, but should be felt in the fourth quarter.

Meanwhile, consumers show willingness to extend their credit for major purchases.

■ Among the cross currents of the business scene, here are a couple of points that should be developed. They could mean a lot in making your forecasts for the fourth quarter.

One: Through late summer, industry was still using up more materials and parts than it was ordering. This is in spite of an improved rate of sales and orders.

Another: Consumers are indicating a willingness to extend their instalment credit. This is the first increase in consumer credit in a full six months where repayments exceeded extensions.

No Help to Autos—Up to now that has helped appliances and other consumer durables, but not automobiles, which were still in the doldrums at the end of the model year.

The significance of the first point is that inventory building is not yet a factor in the overall business picture. But it soon may be. Many businesses have been in a rebuilding state of mind for several months, but improved ordering has not filled all the gaps.

Book value of manufacturing inventories, for example, dropped $300 million in August, with $200 million of the drop coming in the durable goods industries.

Sales Keep Climbing — At the same time, all manufacturing sales climbed $100 million over the July rate to $26.4 billion. This is a not-too-bad figure when compared with $29.1 billion in August of 1957, when the peak of the boom was just being passed.

The point where inventory liquidation will stop is debatable, but if business continues to pick up, manufacturers will have to increase their ordering of materials, adding that more bulk and substance to fourth quarter business.

Big Auto Paper Drop—The instalment credit picture is more difficult to assess, particularly because the upturn in extensions did not include autos. In fact, the overall increase of $30 million in August was over a $112 million reduction in automotive paper.

This provides a fertile ground of forecasting for the consumer credit specialists, particularly those who believe that the drop in auto sales over the past two years is due primarily to over-extension of auto credit back in 1955. But the current level, despite recent declines, is about what it was early in 1957, hardly a point justifying too much optimism.

Reason for Hope—But automotive credit usually parallels overall consumer credit. So there is some hope that new models now coming out in full force, will show improved sales on the new evidence of willingness to extend credit.

No one believes that credit alone is going to be the determining factor in auto sales, but it is one factor in the complex set contributing to auto sales.

Behind New Auto Price Policies

Hold the Line — New auto prices, which generally hold the line and even show a few cuts, will do a lot toward establishing a firm price front across all industry this year.

Of course, automakers had their backs to the wall from a sales point of view. They could not risk challenging further price resistance. And an inside look gave the idea that others were relieved with General Motors' prices, which were the first to be announced.

Non - Inflationary Contract — Some had feared price cuts that would be difficult to meet, although they would have done so.

Price policies for 1959 models also indicate the auto industry believes it can work within the new labor contracts with the United Auto Workers. It's significant that GM announced its prices before negotiations were completed, although the overall dollars and cents had been established.

Pressure on Others—The auto industry apparently is also determined to prove that its contracts are non-inflationary. As the pace setters in establishing cost-of-living escalators, the annual improvement factor, and SUB, it had smarted under charges that it was a partner to inflationary pressures.

It will also put the pressure on other industries to hold their price lines, in spite of the same cost pressures incurred by the auto industry.

M-E-L Passes First-Year Test

The worst of the recession is over and newborn M-E-L is still in business.

The Ford Div. enters 1959 model year full of confidence.—By H. R. Neal.

▪ The shakedown cruise of Ford Motor Co.'s nine-month old Mercury-Edsel-Lincoln Div. is about over. Having survived one of the stormiest periods in recent automotive history, M-E-L has reorganized its management and revamped its product line.

Win, lose, or draw, the division is ready to enter 1959 in the toughest sales arena—the middle and high price classes. Ben D. Mills, new M-E-L general manager, says the company spent more than $138 million developing its 1959 car lines and getting ready to produce them.

Guarded Optimism — Will the company recover its investment? Mr. Mills will only comment his division is "just as optimistic and enthusiastic as our competitors. We are going to have a considerably better year in 1959, as an industry." And at the same time, he says M-E-L products are going to "improve" their share of the market.

Mercury has undergone the most extensive changes. And through the "help" of its competitors, it can make an interesting claim: It's the only car in the medium price field that doesn't share body components with makes in a lower price class, according to Walker A. Williams, assistant general manager.

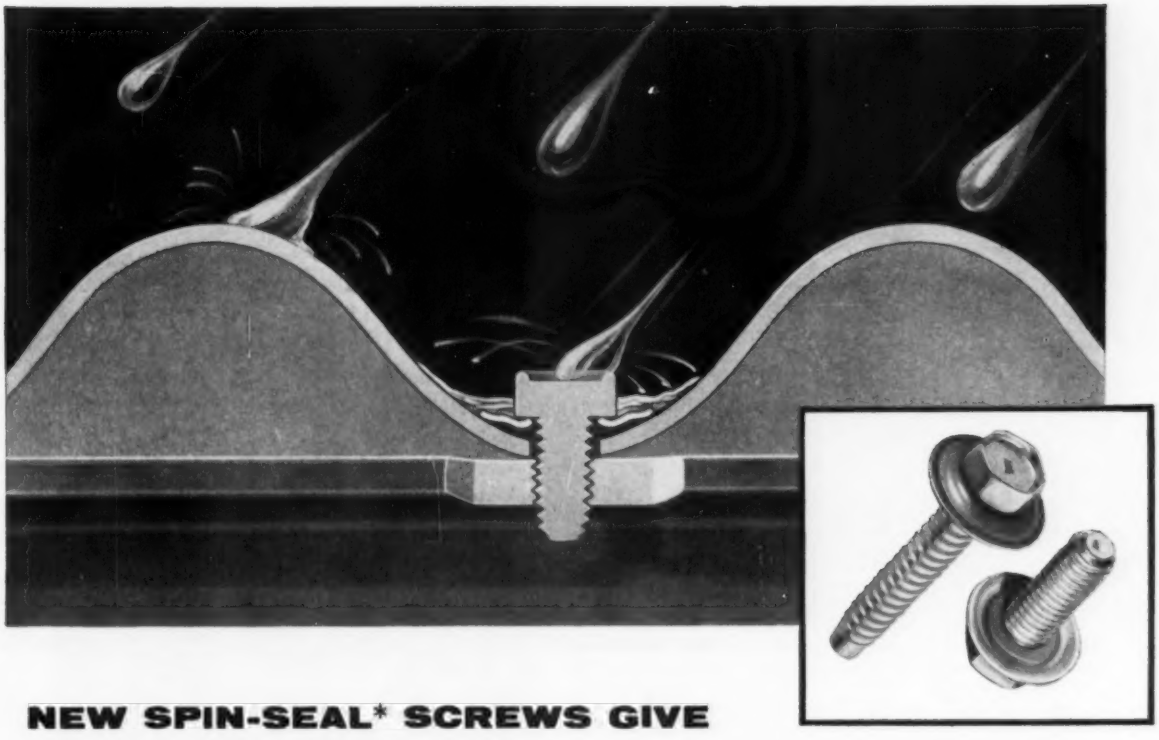
Sheetmetal Changes—Styling changes are numerous, though not a complete departure from those of the past two years. Rather, the angular shape has been softened. Every piece of sheetmetal has been

Fury Leads Plymouth Line

New Styling for Pontiac

Studebaker Lark Goes Overseas

THREE HOPEFULS: Radical style and marketing changes in the auto industry are pointed up by these three cars. The Plymouth Fury 2-door hardtop (top) has new styling from road to roof. Pontiac makes a complete departure from conventional design, as shown by the Star Chief sedan (center), while Studebaker (bottom) goes after the foreign market with its export version of the Lark. It will be assembled in Brussels, Belgium.



NEW SPIN-SEAL* SCREWS GIVE

leakproof fastening

in products . . . in construction

THESE NEW, leakproof fasteners combine a special washer† and built-in sealant with standard machine, cap, or tapping screws.

Three-way seal – Tightening the RB&W "SPIN-SEAL" screw forces the flow-in sealant into spaces around the (1) head, (2) threads and (3) clearance hole, hermetically sealing the opening. The concave, springy washer confines and controls the flow of the sealant and provides an *additional* spring tension seal. Even on corrugated surfaces, the washer conforms to the curve of either crown or valley.

Permanent gasket – Compound is plastic, rather than elastic. Stable and non-aging, it won't split or ozone-check under pressure, is unaffected by industrial atmospheres, resists water, acids, also oil.

Won't gouge finish – Since the washer does not turn with the screw, finished surfaces are not damaged during installation. Nor is there any twisting or damage to sealant.

Standard styles – "SPIN-SEAL" fasteners are available in all standard screw styles except flat head.

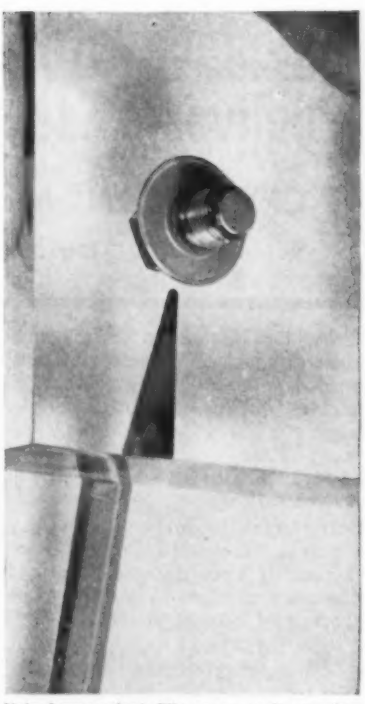
Send for new bulletin SS-1A. It gives full information on "SPIN-SEAL" fasteners. Russell, Burdsall & Ward Bolt and Nut Co.

*Trade Mark †U. S. & Can. Pats. Pend.

R B&W

114th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**



Note how sealant fills space under washer and flows into clearance hole and around threads of RB&W "SPIN-SEAL" Screw.

Large Stocks of One-Piece Elements. You get quick deliveries of Norton "Hot Rods" — on short notice. Also, most popular sizes of these CRYSTOLON heating elements — like the sizes shown in this section of the Worcester stockroom — are now made in the new, one-piece construction — with no welds. This assures greater strength and uniform straightness throughout each rod.

Greatly Increased Strength. Ever since they were first produced "Hot Rods" have been endorsed by users for outlasting other non-metallic heating elements up to 3 to 1. Today, the new one-piece rod, made in most popular sizes — and soon available in all sizes — is twice as strong in standard cross-bending tests.

One-piece "HOT RODS" now ready for immediate delivery...famous for long life and economy

CRYSTOLON heating elements bring you extra advantages for better performance and bigger savings*

Straighter Than Ever. Throughout the entire length of a one-piece, non-welded "Hot Rod" there isn't the slightest bulge in the surface. So, when you insert them into the openings of your furnace or kiln you can be sure there'll be no binding due to uneven diameters.

Scientifically Safe Packaging protects "Hot Rods" even more thoroughly than delicate household glassware or china. They're packed shockproof to reach you unbroken.

"Hot Rods" are a typical Norton ℞ — an expertly engineered prescription for greater efficiency and economy in electric furnaces and kilns. Made of self-bonded silicon carbide, each rod has a central hot zone and cold ends. Most popular sizes are non-welded and interchangeable with your present rods.

You save in element costs because you use far less "Hot Rods." Also, their more uniform heating quality, due to their slow, evenly matched rate of resistance increase, helps you protect product quality and maintain a smooth production flow. For further facts on "Hot Rod" advantages send for booklet *Norton Heating Elements*, NORTON COMPANY, Refractories Division, 209 New Bond St., Worcester 6, Massachusetts.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

NORTON

REFRACTORIES

Engineered... ℞ ...Prescribed

Making better products... to make your products better

NORTON PRODUCTS
Abrasives • Grinding Wheels
Grinding Machines • Refractories
BEHR-MANNING DIVISION
Coated Abrasives • Sharpening Stones
Pressure-Sensitive Tapes

Automotive Production

WEEK ENDING	CARS	TRUCKS
Oct. 4, 1958*	42,275	13,818
Sept. 27, 1958	42,599	14,314
Oct. 5, 1957	21,975	11,688
Sept. 28, 1957	51,552	9,242
TO DATE 1958	2,901,548	616,793
TO DATE 1957	4,693,346	846,104

*Preliminary Source: Ward's Reports

changed for 1959, Mercury says.

Engineering changes provide some welcome improvements. Wheelbase has been lengthened up to 4-in. While it makes the cars longer, an area probably due for more criticism from outside the industry, benefits should outweigh the penalties.

More Room—The longer wheelbase permits moving the engine 4 in. forward. The hump in the floor for the engine and transmission is 50 pct smaller than last year. Mr. Williams points out the person who rides in the center seat is no longer the "forgotten man," as there is more leg room and a more generous cushion.

The instrument panel has also been moved 6-in. further forward, providing knee room.

Glass area has been increased, with the windshield being 61 pct larger. Nearly as important as the increase in glass area is the change in the shape of A-post, or front door pillar. It is nearly straight up the windshield, eliminating the knee-knocking dog-leg characteristic of previous Ford products in recent years.

Two Models Dropped—Mercury is moving up slightly in its price range by dropping its lowest priced Medalist series. However, the Monterey series features an economy engine which operates on regular grade gasoline.

Mercury will have three other V8 engines matched to its Montclair and Park Lane series and its Country Cruiser station wagon series, with the top rating of 345 hp on Park Lane models. Also apparently missing from the Mercury line this year is the Turnpike Cruiser.

Edsel Plans—Edsel, introduced in 1958 as a full product line, is cutting both prices and the number of series it will offer. General manager Mills says Edsel, in its second year, will be better equipped to serve as Ford's "stepping up" car. It will be priced just above the low-priced cars, he promises.

Commenting on Edsel's first year showing, he says, "In spite of the fact that we were in the midst of a serious business recession which affected automobiles more heavily than any other consumer durable goods in the country, we sold nearly 60,000 Edsels in the car's first model year. That is a first year record for medium priced cars." A year ago, the company had set 200,000 units as its sales goal.

Price Changes—But, Mr. Mills explains: "We believe that one of the problems the Edsel encountered in its first year was its broad price range, and to a certain extent it was difficult for the average American to say offhand just where the Edsel fit. When our pricing is announced at the end of this month, those questions will be removed."

Edsel has dropped its two highest priced series, although retaining the name from one. It will offer the Ranger as its lower price series and Corsair as its higher priced series. The series names dropped are Pacer and Citation.

Six-cylinder Engine—In answer to critics of fuel economy Edsel will introduce a 145 hp six-cylinder engine to its line. Three V8 engines will also be available.

Styling of Lincoln and Continental automobiles remains essentially the same as in 1958. However, Continental is adding a Town car and a Limousine. Available only in black, they feature a padded roof and a small back window. The Limousine differs from the Town car in that it has a retractable partition between front and rear compartments.

Confessed Mr. Mills: "Perhaps the automobile industry deserved some of the criticism it received during the first half of 1958. For our part, we are happy to concede that we benefited from it."

THE BULL OF THE WOODS

BOY, THAT'S SOME CRANE MAN--GETTIN' HIMSELF A DRINK OF WATER WITH A 75-TON CRANE--BOY, IS HE GOOD!
CHAMPAGNE IS CHEAP ALONGSIDE OF THAT KIND OF A HOISTER!
SAFETY
OVERHEAD
© 1958 by NEA Service, Inc. T.M. Reg. U.S. Pat. Off.

At Grinnell, molten iron is poured from air furnaces 16 hours a day (above) to produce over 2,000 different types and sizes of castings like those shown at right.

Grinnell uses HANNA SILVERY at their Columbia, Pa., plant to help maintain close silicon control

Grinnell Corporation is nationally known for its automatic sprinkler systems—a line relied on for dependable fire protection by thousands of American businesses. For these systems, and for its piping supply sales throughout the country, Grinnell at its Columbia, Pa., plant annually produces over 100 million malleable iron castings of uniform quality and dependability—pipe fittings, pipe hangers and supports from ⅛" I.D. elbows to 6" I.D. tees.

Every one of more than 2,000 patterns, many of them intricate, is cast from the same mixture. An all-important part of this mixture is Hanna Silvery Pig Iron. Grinnell metallurgists have found that Hanna Silvery, with its dependable analysis, gives them the silicon control so essential to the uniform qualities required in sprinkler systems and pipe fittings.

In addition to Silvery, Hanna produces all regular grades of pig iron, including HannaTite, a specially controlled close-grain iron. All are available in the popular 38-pound pig and the smaller HannaTen ingot.

Ask your Hanna representative how he can help solve your pig iron problems. He is an expert and as close as your telephone.

THE HANNA FURNACE CORPORATION
Buffalo • Detroit • New York • Philadelphia
Merchant Pig Iron Division of
NATIONAL STEEL CORPORATION

Will Congress Be Anti-Business?

GOP Leaders See the Handwriting on the Wall

Republican leaders expect Democrats to have effective control of the next Congress.

The result, they say, will be anti-industry legislation. — By G. H. Baker.

▪ A new wave of anti-business and anti-industry laws may be in the making.

Some Republican Congressmen are glumly (but privately) predicting a noisy, left-of-center legislature come January, that will make it harder than ever for a businessman to make a buck.

Effective Control—If the experts are reading the signs correctly, the voters will up the Democratic majority in both House and Senate in November. This would firm up Democratic control. In the last session it was so slender it wavered and broke on many issues.

Republican leaders, alarmed at this grim prospect, are scrambling for hold-the-line alliances with conservative Southern Democrats. They figure a coalition could block an attempt to amend the Taft-Hartley law in labor's favor, and imposition of federal price controls, both of which they believe will be major issues.

Odds Shifting—Such an uneasy alliance has worked in the past. But things don't look good this time. Here's why.

As the South becomes more industrialized, it tends more toward the so-called "liberal" Democrats' position and away from the traditional conservative view.

Ever since the end of World War II, the South has been moving gradually away from the right-wing faction of the Democratic party and toward the left.

More Industrial—It amounts to this: The economy of the South is no longer dependent chiefly upon agriculture.

Industry is on the rise — and rapidly. Unions, although still in an uphill fight for a toe-hold, are gaining in representation and in prestige. (No more goons; just friendly persuasion.)

Result: Southern congressmen of the old school are being replaced by some sharp young men who lean more toward Walter Reuther than Jefferson Davis.

A coalition of Northern and Southern conservatives next year is still possible but the chances for effective operation of such an alliance are getting slimmer with each passing year.

Farm Machinery Is Next Kefauver Target

Farm machinery manufacturers are due for a working-over by Sen. Kefauver (D., Tenn.), and his staff of congressional investigators.

Mr. Kefauver, chairman of a Senate antimonopoly subcommittee, has sent word back to Washington from his campaign travels to start preparing for a detailed public investigation of farm machinery manufacturers.

U.S. Will Pay on Performance

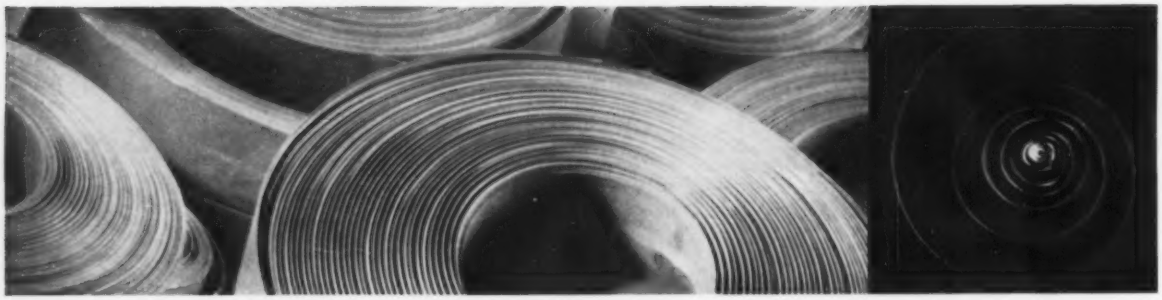
Bigger Both Ways — Industry may soon have to operate under government buying policies granting bigger rewards for superior performance and sharp penalties for poor results.

Such a shift in policy, according to its sponsor, E. R. Quesada, special assistant to President Eisenhower, will "demand that defense industries accept increased risks and show a greater willingness to make bolder decisions and larger expenditures for research and development."

Mr. Quesada, speaking before the National Security Industrial Association, complained that under the present system, contractors working under cost-plus-fixed-fee, or incentive contracts get the same profits whether the weapon is completed on time, performs well, and cost estimates are not exceeded, or none of these.

Slows Progress—"The guaranteed reward to mediocrity and the parsimonious prizes given for superior performance do not necessarily work to our advantage in a free enterprise system. . . . The result may well be slower progress than we need to survive," he said.

He admits that where good performance is rewarded liberally and poor performance severely penalized, someone is apt to get hurt; the spread between the financial condition of successful and unsuccessful is likely to be widened, and some present contractors are almost certain to disappear.

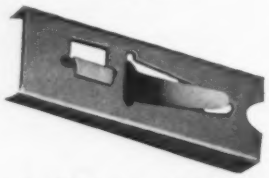


How they're using

Wallace Barnes Cold-rolled Specialty Steels

1. *In Three Drawing Stations*

The part shown in illustration one was made from .59 – .74% carbon steel in three drawing stations. From .70 – .80% carbon, this piece should have four or five drawing stations. The piece could be made from .90 – 1.05% carbon, but would require seven drawing stations with fully annealed steel.



2. *Blanked on 45° Angle*

The stamping shown in the second illustration was made from .70 – .80% carbon spring steel. It was blanked and pierced on a 45° angle, with small holes pierced to prevent fracture in later forming and bending. It was then given severe secondary forming. The small tab shows "orange peel" and probable fracture would occur if the part were formed from .90 – 1.05% carbon.

3. *All Flanging One Operation*

Our third part is a gun stamping made from .70 – .80% carbon with a sharp bend with the grain in one stroke of the press. Higher carbon will fracture due to its less ductile qualities.

4. *Thirteen Steps Progressive*

The fastener shown in the fourth illustration was made from the .59 – .74% carbon steel, the only spring steel which would take the bends and draws to which it is subjected here. All the higher carbon steels were rejected because they failed under the cold-work necessary to produce the two small extrusions. It took seven reductions to bring these extrusions within tolerance. There were thirteen steps total in the progressive die.

These examples show how proper steel selection may save operations and insure satisfactory performance. Among the many sizes and types of Wallace Barnes cold-rolled specialty steels is the right one for your application. Send for "Physical Property Charts" giving tensile strength and forming properties of Wallace Barnes tempered steels.

Wallace Barnes Steel Division

Bristol, Connecticut

Associated Spring Corporation

Missile Men Want Exotic Metals

They List Materials of the Future at SAE Meeting

Missile planning calls for materials with higher strength-density ratio.

Sandwich construction, more numerical controls figure in the future.—By R. R. Kay.

▪ Where do we go from here? What will the exotic materials of tomorrow be? What's the future for numerical controls? These were just a few of the questions asked last week at the Society of Automotive Engineers aeronautical meeting in Los Angeles.

One thing is certain. Quality not quantity is the order of the day. Pentagon planners still put emphasis on precision production of limited quantities of more and more complex material.

Steel Lags—The next generation of missiles of high mach number will need higher strength-density ratio material for the separable propulsive systems and that goes for liquid or solid fuel. High strength aluminum alloys fulfill some needs but steels now on the market are not of high enough strength. That's what Leo Shapiro, chief metallurgist Douglas Aircraft Santa Monica believes.

Dr. Shapiro urges the steel industry to get on the ball. When missile production programs get under way, good-sized orders will be in the works.

Another Viewpoint—Incidentally, in the general clamor for exotic metals for air vehicles that need them let's not forget the vehicles that don't need them. The next generation of mach 0.85 jetliners will spawn a generation of mach 1.0 plus jetliners. None of these will need exotic metals for their airframes.

But the metal producing industry will go right on being plagued by demands for large, flat, close tolerance construction materials that are lightweight, higher strength and tear resistant.

Numerical Controls Boom—Industry is in for a numerically-controlled future. That's a fact. But to have it soon and have it good means solid, long-range planning. That goes for both men and machine tools.

M. C. Copold of Convair says you've got to take a fresh look at your production make-up.

Numerically-controlled machine tools will cut your costs. Ratio of production costs to sales will be decidedly in your favor. Mr. Copold urges management to study, accept, and plan for this.

More Sandwich Designs—Look for even greater use of sandwich construction in tomorrow's air vehicles. The trend at the moment is toward brazed honeycomb because of its multi-directional strength.

Today's B-58 bomber has 1000 sq ft of sandwich construction but the B-70 will have 18,000 sq ft. In fact, the entire wing and control surfaces will probably be both brazed honeycomb and welded corrugated sandwich.

Close Look at Space Age Metalworking

Trend to the Future — Tooling for the Space Age was the theme at the recent Western Tool Show.

Production techniques and products designed for tomorrow's metalworking got plenty of attention at the American Society of Tool Engineers meeting in Los Angeles. But today's manufacturing problems also got a thorough going over.

Based on papers read to the assembled engineers and the 200 exhibits, here are some of the developments to watch:

Forming and Welding—Explosive forming of metal might turn out to be a major aid to the metalworking industry. It looks as if it could reduce heavy capital equipment costs. Totally new metalworking methods may result. But the process still needs refinement.

Welding tooling gives aerodynamic smoothness to missile skins and efficiency of high quality to joints. Ceramic tools are doing a good milling job on steels at 2000 fpm. They show good tool life with no serious chipping.

Brazing for Honeycombs—The tool engineer is in a key spot to help cut costs of manufacturing honeycomb sandwich structures. But much depends on the design and operation of tools and fixtures used in brazing. A fixture must operate repeatedly at 1650° F to 2250° F without failure. It must exert pressure for brazing, remain rigid to hold shape accurately, meter protective gas to maintain clean atmospheres, and provide for accurate temperature measurement.

Another fine product gains NEW S.A. By Switching to the Saginaw Screw*

FRANK S. BUCKINGHAM
Chief Engineer, Static Testing Machines, Baldwin-Lima-Hamilton Corp., reports: "Using a Saginaw Screw on this tester reduced required horsepower from 15 to 5."

WORLD'S MOST EFFICIENT ACTUATOR OPERATES 75-TON BALDWIN TESTER WITH 5 H.P. INSTEAD OF 15

When you can cut power requirements 66% you give your product a lot more ***S**ales **A**ppeal—and that's just what Baldwin-Lima-Hamilton has done by switching from an acme thread to a preloaded Saginaw b/b Screw. What's more, it speeds up cycling and ends fretting corrosion, too.

The truly amazing ability of the Saginaw Screw to convert rotary motion to linear motion with over 90% efficiency is saving power, space, weight and assuring smoother, more dependable performance in countless products from miniature electronic controls to giant production equipment.

Perhaps the Saginaw Screw can give *your* products that vital new **S**ales **A**ppeal you're looking for right now. To find out, write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—*world's largest producers of b/b screws and splines.*

**Give your products NEW SALES APPEAL... switch to the*

Saginaw ball bearing Screw

Where Automatic Assembly Pays

Don't Overlook Its Cost-Cutting Advantages

There can be important benefits in a switch to automatic methods of assembly, machinery builders point out.

If your work is complex, volume big enough, and product design stable a change may be worthwhile.—By E. J. Egan, Jr.

▪ Automatic assembly is as important to cost reduction programs as automatic machining or parts handling. It may be even more important if you don't get into mass production. And yet, the use of self-operated devices to put things together gets far less attention as a rule.

Makers of automatic assembly machines urge you to look inside your finished products. Look for anything whose parts are joined or fitted by straightforward motions. If you find any, the experts say, start asking yourself some questions.

Two Big Questions—For example, does the production volume or complexity of any such subassembly warrant reducing the cost of putting it together by hand? If the answer is yes, here's the next question: Does the design appear fairly stable for the next few years? If the answer is yes again, you might think further about assembling it automatically.

Here is a good place to remember that there is such a thing as semiautomatic assembly. There's no law that you have to go from full manual to full automatic.

Close Control Counts — You might just as well go all the way if a simple push or twist is all it takes to join a couple of parts. But if a compound motion is involved anywhere, better put a worker with 10 nimble fingers in the line at that point.

Remember also that any automatic operation needs good, close control. Cycling speeds at all unattended stations should be adjustable for top efficiency. Once set, though, they should be tamper proof. Work transfer speed should also be adjustable. The idea is to push it as high as possible because, in a sense, this is nonproductive time.

By asking these simple questions and remembering these key points, many firms have put the automatic assembly concept to cost-saving use.

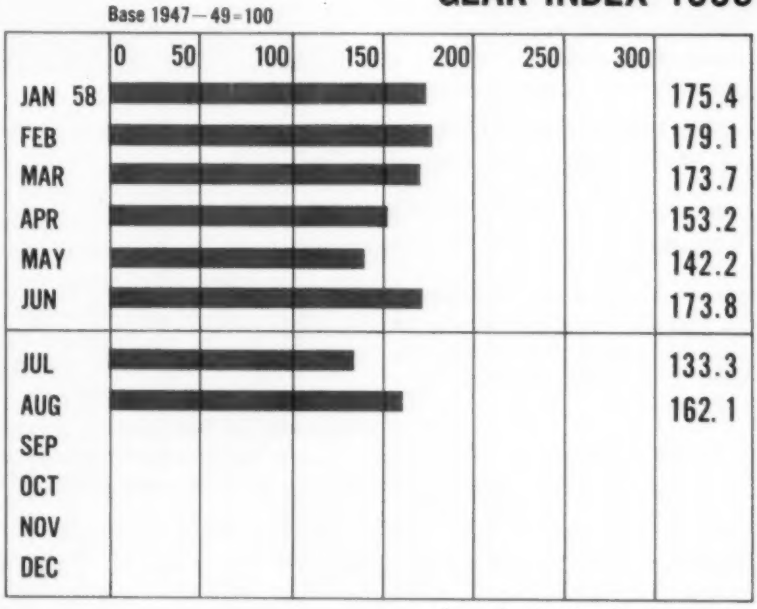
As these successful applications become better known, more medium-sized plants will follow suit.

AMTDA Meets Oct. 16-17

The American Machine Tool Distributors' Assn. will hold its 34th Annual Meeting next Thursday and Friday, October 16 and 17, at the Sheraton Plaza Hotel in Boston. AMTDA officials expect a record turnout of distributors and builders despite the poor business conditions that still plague the machine tool industry.

One of the guest speakers will be Ralph J. Kraut, president, Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. His subject: "Selling—A Team Effort."

GEAR INDEX 1958



Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Important Joiners — Titanium Fabricators, Inc., Burbank, Calif. has a development contract from Union Carbide Nuclear Co., Div. of Union Carbide Corp., to develop techniques for forming and welding of pressure vessels from Zircoly-2 plate. Such Zirconium alloy pressure vessels will be used by the Atomic Energy Commission for nuclear applications.

Service at Work—G. W. Frick, a veteran of 40 years in specialty steels, has announced the formation of the Frick Steel Co., which will provide warehouse service on quality stainless and tool steels throughout the tri-state area. Sales offices and production facilities are located at 1029 McLaughlin Run Rd., Bridgeville, Pa.

Groundwork Over—Air Reduction Co., Inc., New York, and The Mastic Tile Corp. of America, have formed the Cumberland Chemical Corp. New chemical plant will produce vinyl flooring materials and will be built at Calvert City, Ky.

Advance Booking—Brown-Wales Co. of Cambridge, Mass., steel distributors, have agreed to lease a modern new warehouse and office building to be constructed this month on a four-acre site in Auburn, Mass., in the Worcester area.

Two Out of Three—For the second time in three years, the National Tool & Die Manufacturers Assn. will receive an award from the National Safety Council for its work in the promotion of safety in small plants and businesses. Award will be presented to the NTDMA on Oct. 22 in the LaSalle Hotel, Chicago, during the National Safety Congress.

Metals Debut — National-Standard Co., Niles, Mich., has acquired the Cross Engr. Co., Carbondale, Pa., and will operate it as the Cross Perforated Metals plant. Acquisition marks National Standard's entry into the perforated metal field.

Silicon Site — Wigton - Abott Corp., engineers and constructors of Plainfield, N. J., has completed a $1.5 million chemical process plant for Merck & Co., Inc., at the chemical company's Cherokee plant in Danville, Pa. The plant is part of Merck's new $5 million facilities for expanded production of ultra-pure silicon for the electronics industry.

Bethlehem's Baby — The Navy has awarded Bethlehem Steel Co., Quincy, Mass., a letter contract for the design and construction of a nuclear-powered guided missile frigate. The contract provides a maximum liability of $10 million which will cover early costs of the ship.

IN THE FAMILY: R. H. Groves is the new marketing director of The IRON AGE.

International View — The Dow Chemical Co. has formed an overseas subsidiary company in Venezuela to handle its international operations. The wholly-owned subsidiary, Dow Chemical International Ltd., S. A., will consolidate overseas sales of Dow products and administer the company's business interests and investments abroad.

Millions for Lox — Linde Co., Div. of Union Carbide Corp., is building a multi-million dollar liquid oxygen and nitrogen plant at Pittsburg, Calif. The plant will cover a 32-acre tract and will produce 300 tons of liquid oxygen and nitrogen daily after completion in early 1960.

Pressing Need—Dreis & Krump Mfg. Co., Chicago, is building a new addition to meet the need for more assembly space for its larger press brakes and straight-side-type presses. The building will be completed about October 15.

Strong Bond—Sahlin Engr. Co., Inc., Birmingham, Mich., has formed a British subsidiary, Sahlin Engr. Co., Ltd., for manufacture and sale of its Iron Hand, a machine for automatically handling pressed metal stampings, and related automation equipment. It will be located in the Birmingham area of England.

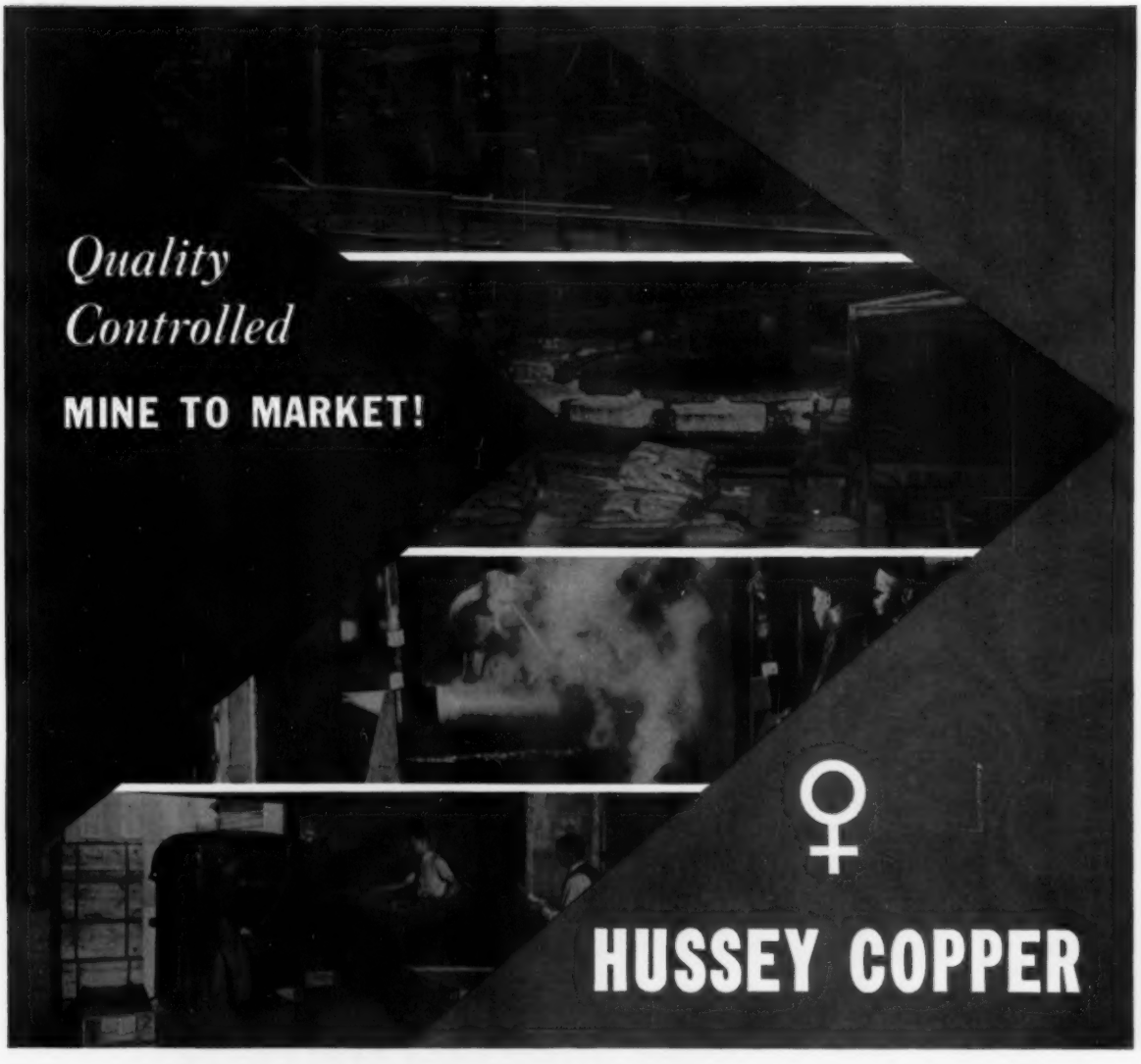
New ASME Prexy — Glenn B. Warren, vice president and consulting engineer of the turbine division, General Electric Co., has been elected president of The American Society of Mechanical Engineers.

Opening at the Bay—The Shaw-Box Crane & Hoist Div. of Manning, Maxwell & Moore, Inc. has opened its new district sales offices and warehouse at 450 Bay Shore Blvd., San Francisco, Calif.

Advance Casting—A new 8000 sq ft aluminum and brass foundry building is now being erected one year ahead of schedule by The Chicago Hardware Foundry Co., N. Chicago, Ill., to meet the growing demand for non-ferrous castings.

Braeburn Bar Turner — Another step in the expansion of steel finishing capacity at the Braeburn Alloy Steel Co., Braeburn, Pa. is the installation of a new Blaw-Knox bar turner. Braeburn recently added a Blaw-Knox 2-roll straightener for straightening alloy steel bars, and a 1500-ton forging press.

New Location—Wickwire Spencer Div., Colorado Fuel & Iron Corp. moved its New Orleans sales office to 1128 Dublin at Oak St., New Orleans 18, La.



Hussey Copper Products

Sheets • Strip • Rolls • Wire
Tubing • Pipe • Rounds
Squares • Hexagons
Copper Roof Drainage Products
Copper Building Products

C. G. HUSSEY & COMPANY
(Division of Copper Range Company)
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WHITE PINE COPPER COMPANY
(Subsidiary Copper Range Company)

7 CONVENIENT WAREHOUSES

PITTSBURGH (19)
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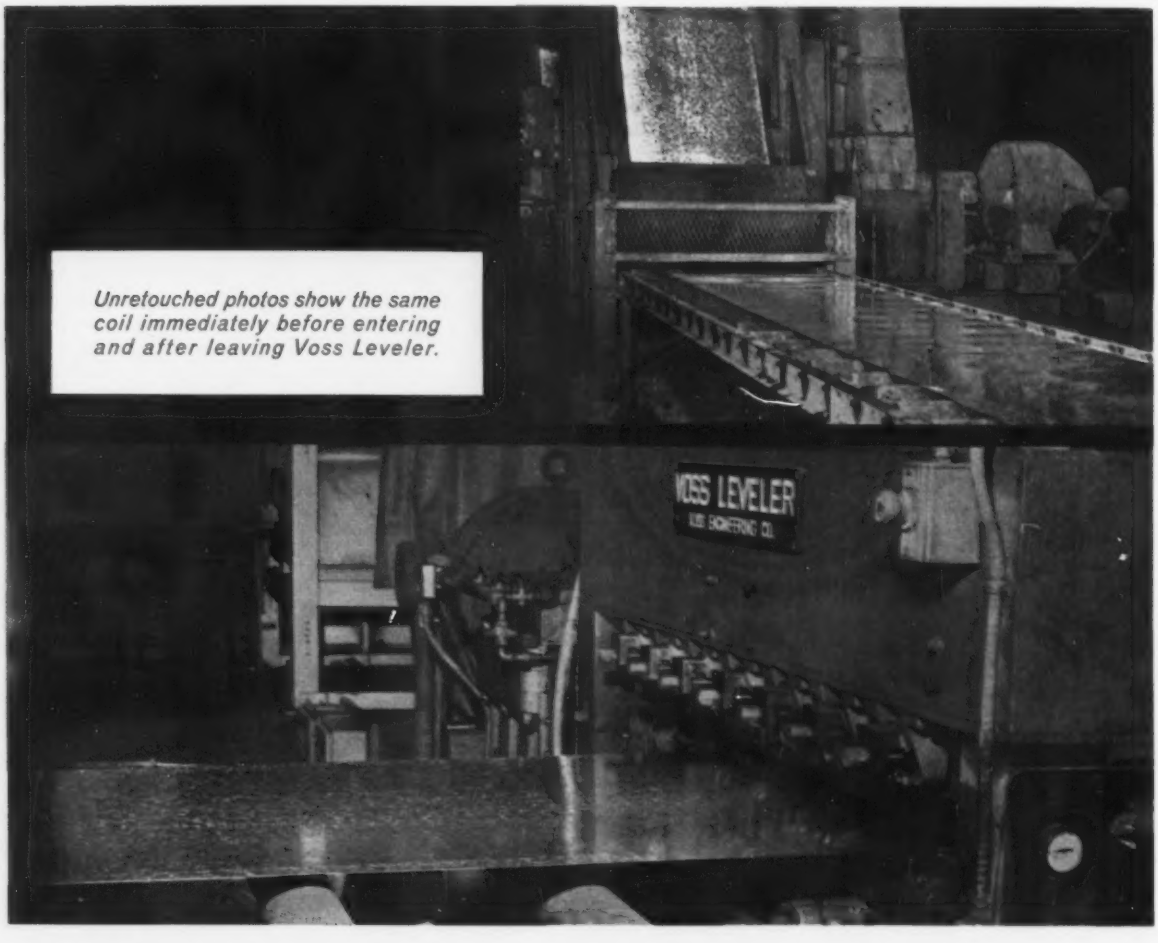
5318 St. Clair Ave.
CINCINNATI (37)
1045 Meta Drive
CHICAGO (18)
3900 N. Elston Ave.
ST. LOUIS (1)
Central Terminal Bldg.
PHILADELPHIA (30)
1632 Fairmount Ave.
NEW YORK, LONG ISLAND CITY (6)
34-39 Thirty-first St.

Your best guarantee of quality is a product controlled from origin to finished product by a single source. Hussey Copper is mined, smelted, refined and rolled by the same capable organization. Make sure it's copper . . . make it Hussey Copper and be sure!

Since 1848
HUSSEY
COPPER • BRASS



Unretouched photos show the same coil immediately before entering and after leaving Voss Leveler.

Better than
1000 TONS DAILY PRODUCTION
Equaling or Exceeding Stretcher-Level Flatness with VOSS ROLLER LEVELERS

This Voss Inverted Roller Leveler is one of several installed in the high speed galvanizing lines of a leading sheet producer. Operating in a range of 10 to 30 gauge, Voss Levelers are giving this producer a new standard of flatness and greatly improved non-fluting qualities. The result is a sheet or coil equal to or exceeding stretcher-level flatness . . . at top production speeds.

Voss-patented design features offer unusual precision and flexibility. Work rolls are backed by a multiple system of individually adjustable back-up rollers, and, combined with simultaneous roll bend and longitudinal and radial tilt, provide area pressure control on any section of the work. Compact and trouble-free, Voss Roller Levelers are engineered to level hot or cold-rolled sheet, coil, strip or plate as well as non-ferrous metals. Let us demonstrate the advantages leading steel producers are enjoying through the use of Voss Inverted Roller Levelers.

Voss ENGINEERING CO.

7301 Penn Ave. Pittsburgh 8, Pa. Churchill 2-4422

W. H. Armstrong, elected vice president and general manager, Metal Finish, Inc., Newark, N. J.

T. E. Moffitt, elected president, Marble-Nye Co., Worcester, Mass., a subsidiary of Hooker Chemical Corp.; **T. F. Willers,** elected treasurer and **A. L. Francis,** named asst. treasurer and clerk.

W. W. Dunkum, Jr., elected vice president and general manager, Reynolds Philippine Corp., Manila, P. I., an affiliate of Reynolds Metals Co., Richmond, Va.

E. P. Fleischer, appointed asst. to the president, Consolidated Electrodynamics Corp., Pasadena, Calif.

T. R. Evans, named sales manager, Fine Metals and Chemicals Div., Electro Metallurgical Co.

J. R. Fox, appointed vice president, Aluminum Co. of America and general manager, Refining Div.

D. J. Richards, promoted to district manager, Detroit sales office, The Beryllium Corp., Reading, Pa.

A. E. Russert, appointed sales manager, Strip Steel Sales Div. and J. R. Sansom, appointed sales manager, Fabricated Materials Div., Acme Steel Co., Chicago.

R. W. Keenan, appointed manager, production planning and control, Sharon Steel Corp.

T. Q. Raney, promoted to New England district sales manager, Volco Brass & Copper Co., Kenilworth, N. J.

Ralph Rathyen, promoted to industrial sales manager, Joseph Dixon Crucible Co., Jersey City, N. J.

P. G. Jacka, appointed general manager, The Herman Pneumatic Machine Co., Pittsburgh.

W. E. Thornley, appointed sales manager, Bulk Handling Div., Jervis B. Webb Co., Detroit.

W. P. Hill, elected vice president, engineering, National Steel Corp., Pittsburgh.

J. S. Kline, appointed asst. general manager and chief executive, The Carpenter Steel Co.'s Alloy Tube Div., Union, N. J.

G. W. Streepey, appointed general manager, Aluminum Co. of America's Raw Materials Div., Pittsburgh.

W. M. O'Hara, Jr., named production manager, Enamelstrip Corp., Allentown, Pa., Div. of National Steel Corp.; **J. L. Cobane,** appointed sales manager, vinyl-

J. P. E. Niedringhaus, elected vice president, tin plate sales, Granite City Steel Co., Granite City, Ill.

J. F. Croasdale, elected vice president and executive head, Baltimore Div., Revere Copper & Brass Inc., New York.

J. C. Hydrick, named vice president and general manager, Disston Div., H. K. Porter Co., Inc., Philadelphia.

metal laminate products and **G. H. Fitch,** named sales manager, organic coated products.

N. C. McNutt, promoted to vice president, Strip Steel Sales Div., Acme Steel Co., Chicago.

R. J. Baker, named purchasing agent, and **D. H. Kattman,** asst. purchasing agent, Niagara Falls plant and the Durez Plastics Div., Hooker Chemical Corp., Niagara Falls, N. Y.

Charles Raysor, appointed sales engineer, Downingtown Iron Works, Div. of Pressed Steel Tank Co.

W. T. Groves, appointed chief metallurgical engineer, Dana Corp., Toledo, O.

F. B. Svendsen, appointed sales engineer, New York and Northwestern Pennsylvania area, The Abrasives Div., Elgin National Watch Co., Elgin, Ill.

Roy Segerdahl, appointed manager, Quality Control Div., Ford Instrument Co., Div. of Sperry Rand Corp.

Following promotions are within the Baltimore Div. of Revere Copper and Brass Inc. **N. K. Besse,** works manager; **J. H. Corrigan, Jr.,** sales manager; **LeRoy Wilson, Jr.,** manager, industrial sales, aluminum; **J. E. Orr, Jr.,** manager, industrial sales, copper and brass.

J. A. Pfann, named market research supervisor, Callery Chemical Co.

T. N. Parlon, named sales manager, Yale electric lift trucks, Yale Materials Handling Div., The Yale & Towne Mfg. Co., Philadelphia.

F. G. Benford, appointed manager, Brackenridge (Pa.) Works, Allegheny Ludlum Steel Corp., Pittsburgh.

P. L. Dafoe, promoted to vice president, Fabricated Materials Div., Acme Steel Co., Chicago.

P. N. Stanton, named manager, Machine Tool Div., Clearing Machine Corp., Div. of U. S. Industries, Inc.

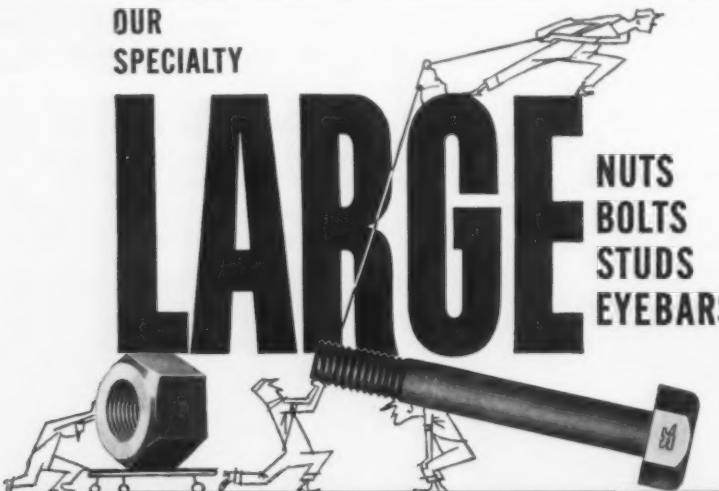
G. V. Schlitzer, appointed New York district sales manager, Colson Corp., Chicago.

D. C. Buck, named asst. chief metallurgical engineer, U. S. Steel Corp., Pittsburgh.

C. S. Walton, appointed product metallurgical engineer, customer technical service section, Crucible

OUR SPECIALTY

LARGE NUTS BOLTS STUDS EYEBARS



1¾" through 8" Bolt Diameter

Of course, our fasteners aren't quite this big, but we do make the largest nuts, bolts, studs and eye bars in the metalworking industry. Save time and money by letting specialists fabricate your large fasteners of all types. Made in a factory devoted exclusively to their manufacture. Complete steel stocks. Modern testing and heat treating facilities.

Send For The Dyson Large Fastener Catalog
36-page catalog contains dimensions, specifications and prices on Dyson large forged nuts, plus data on large eye bars, bolts and studs.

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Design of a concentrating plant to process 60,000 tons of iron ore per day. Open pit bauxite facilities. Coking coal processing plants. Diatomite plants. Cement plants. These are a few of many projects and studies Kaiser Engineers undertakes for the Minerals industries in the United States and world-wide—Quebec, Jamaica, Mexico, Brazil, Australia, New Zealand, Greece, Turkey, India.

From determination of process through design and construction of complete facilities, KE can perform any or all steps. And perform them with Ingenuity—to produce a more efficient operation, in less time, at lower cost.

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Pendulum ore conveyor—Ingenuity produced KE innovation distributing beneficiated iron ore in 180° crescent; conserved space, cut rehandling costs.

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When you buy from U. S. Steel

STEEL + PLUS IN ACTION: RESEARCH

This picture of the inside of an open hearth furnace was taken by a high-speed motion picture camera that takes up to 3000 frames per second. When the pictures are projected at normal viewing speed, one second of action lasts almost four minutes! This permits U. S. Steel researchers to record and study in detail the action taking place inside the furnace. New and intimate knowledge like this helps to improve the quality and production of USS steels.

American Bridge • American Steel & Wire and Cyclone Fence • Columbia-Geneva Steel • Consolidated Western Steel • National Tube • Oil Well Supply
Tennessee Coal & Iron • United States Steel Homes • United States Steel Products • United States Steel Supply and Gerrard Steel Strapping
Universal Atlas Cement • United States Steel Export Company

you get STEEL + PLUS

STEEL + PLUS IN ACTION: MARKETING ASSISTANCE

Today's customer looks closely at a product for some mark of assurance that he recognizes. If he's sold on the mark—he's pre-sold on the product. That's why U. S. Steel launched the powerful STEELMARK program in national magazines and on television. Millions of people are being pre-sold on steel products that bear the familiar STEELMARK emblem. And everyone can benefit because STEELMARK merchandise tags and labels are available free to manufacturers and retailers of steel products.

STEEL + PLUS IN ACTION: TECHNICAL ASSISTANCE

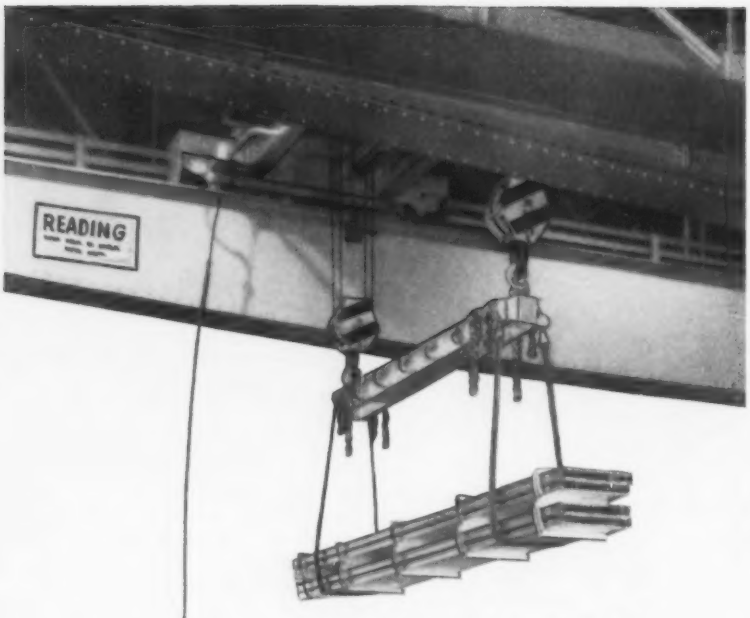
A turbine manufacturer made discs from a special alloy steel that had to be forged, cross-rolled, heat treated, and torch-cut to size . . . *before* machining. Our metallurgists suggested the use of USS "T-1" Steel supplied in circular plates. "T-1" Steel had better mechanical properties and it eliminated the need for forging and cross-rolling. The manufacturer adopted "T-1" Steel and saved 60% in material costs.

STEEL + PLUS IN ACTION: FACILITIES

The T-2 Tanker of World War II fame is not big enough to be practical today. So they "jumboize" it—cut the ship apart and insert a new and bigger mid-body section. Thus such tankers, otherwise obsolete, again become economical carriers, saving their owners millions of dollars through the greater capacity and years of service. American Bridge Division of U. S. Steel has the facilities, experience, and personnel to handle a wide range of all-welded steel Marine construction.

USS and "T-1" are registered trademarks

USS **United States Steel**



At ALCOA, 2 Reading Cranes do the **heavy** work . . .

Two 10-ton Cranes by Reading are now in operation at ALCOA's Lafayette, Indiana plant. One is used for heavy handling in the area around the 14,000-ton extrusion press, while the other has made an important contribution to easier, more economical warehousing.

The warehouse area crane, pictured above, operates from the floor by a pendant push-button station. Both crane slings and steel-handling racks are used. It's a spread bridge model and runs on a 220′ track.

Since its installation, warehousemen are able to stack higher, handle longer and heavier aluminum shapes, tubing and ingots. More space is made available for storage and both time and labor are saved.

Reading's unique "Unit Construction" plan offers you special equipment for your own plant at the low cost of standard parts. Investigate now this proven way to get faster, better materials handling. A note on your company letterhead will bring a Reading engineer to analyze your handling operations . . . at no obligation.

READING CRANE & HOIST CORPORATION, 2101 Adams St., Reading, Pa.

READING CRANES

CHAIN HOISTS · OVERHEAD TRAVELING CRANES · ELECTRIC HOISTS

Steel Co.'s Metallurgical Div., Pittsburgh.

J. I. Kirby, assigned to the Pittsburgh district sales office, Vulcan-Kidd Steel Div., H. K. Porter Co., Inc., as a sales engineer.

T. L. Case, named asst. to the chief engineer, C. I. Hayes, Inc., Cranston, R. I.

J. B. Beckwith, appointed engineering manager, and **D. E. Waite,** chief product engineer, Wallace Barnes Div., Associated Spring Corp., Bristol, Conn.

J. J. Scherer, appointed district sales manager and will head, Detroit office, The S-P Mfg. Co.

H. H. Warren, appointed New York branch sales manager, Exide Industrial Div., The Electric Storage Battery Co., Philadelphia.

OBITUARIES

P. B. Niles, 56, a vice president and director, The Yale & Towne Mfg. Co.

S. J. Corl, 77, retired vice president, Bethlehem Steel Co.'s Steel Div., Bethlehem, Pa.

Dr. M. O. Shrader, 45, supervisor-organic chemicals research, Pittsburgh Coke & Chemical Co.'s Research & Development Dept.

C. J. Pankow, 72, retired treasurer and chief engineer, The Crosby Co., Buffalo, N. Y.

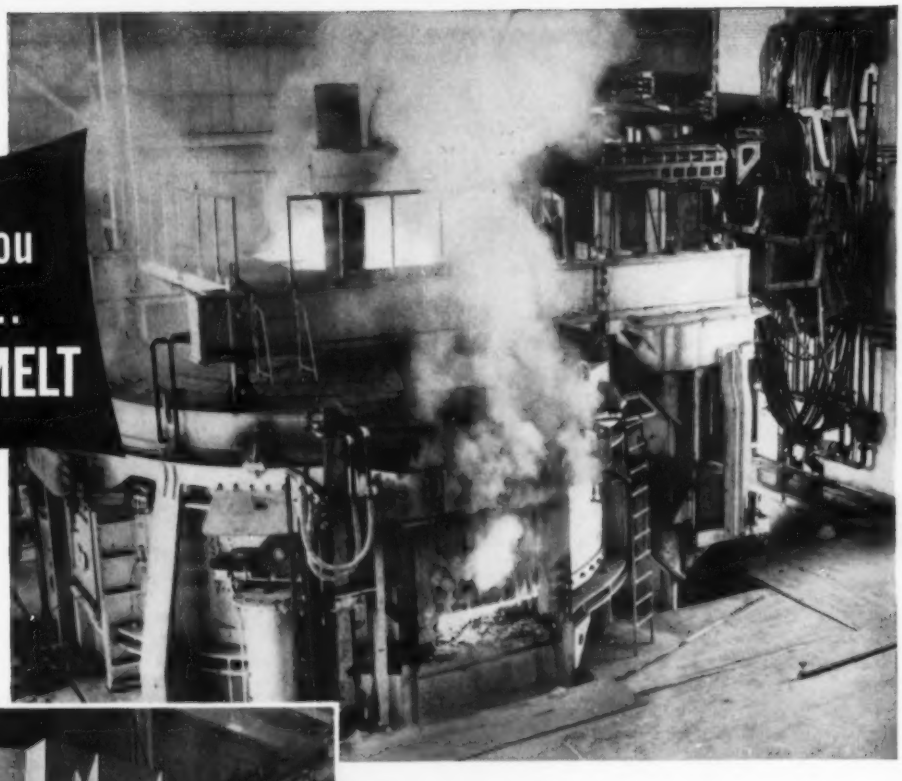
A. N. Aird, 55, vice president, Baltimore Div., Revere Copper & Brass Inc.

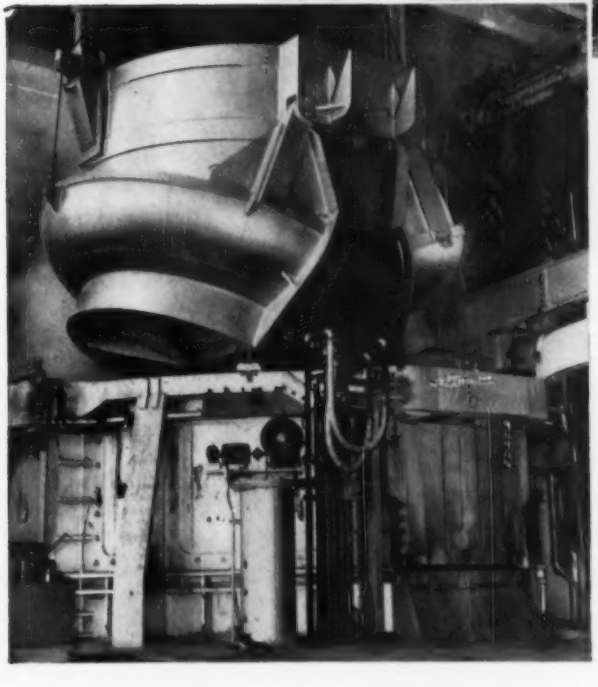
R. J. Miller, 76, senior vice president and vice chairman of the board, McKay Machinery Co., Youngstown, O.

A. S. Preuster, 78, sales representative, International Graphite & Electrode Div., Speer Carbon Co., Saint Marys, Pa.

R. L. Smith, 47, public relations director, The American Road Builders Assn., Washington, D. C.

When you melt... LECTROMELT





first of a powerful pair

200-ton heats are now being produced in this 24-foot Lectromelt Furnace. A second of similar capacity will soon be installed here in this Southern steel mill.

Catalog No. 10 describes Lectromelt furnace equipment for melting and refining. For a copy, write Lectromelt Furnace Division, McGraw-Edison Company, 312 32nd Street, Pittsburgh 30, Pennsylvania.

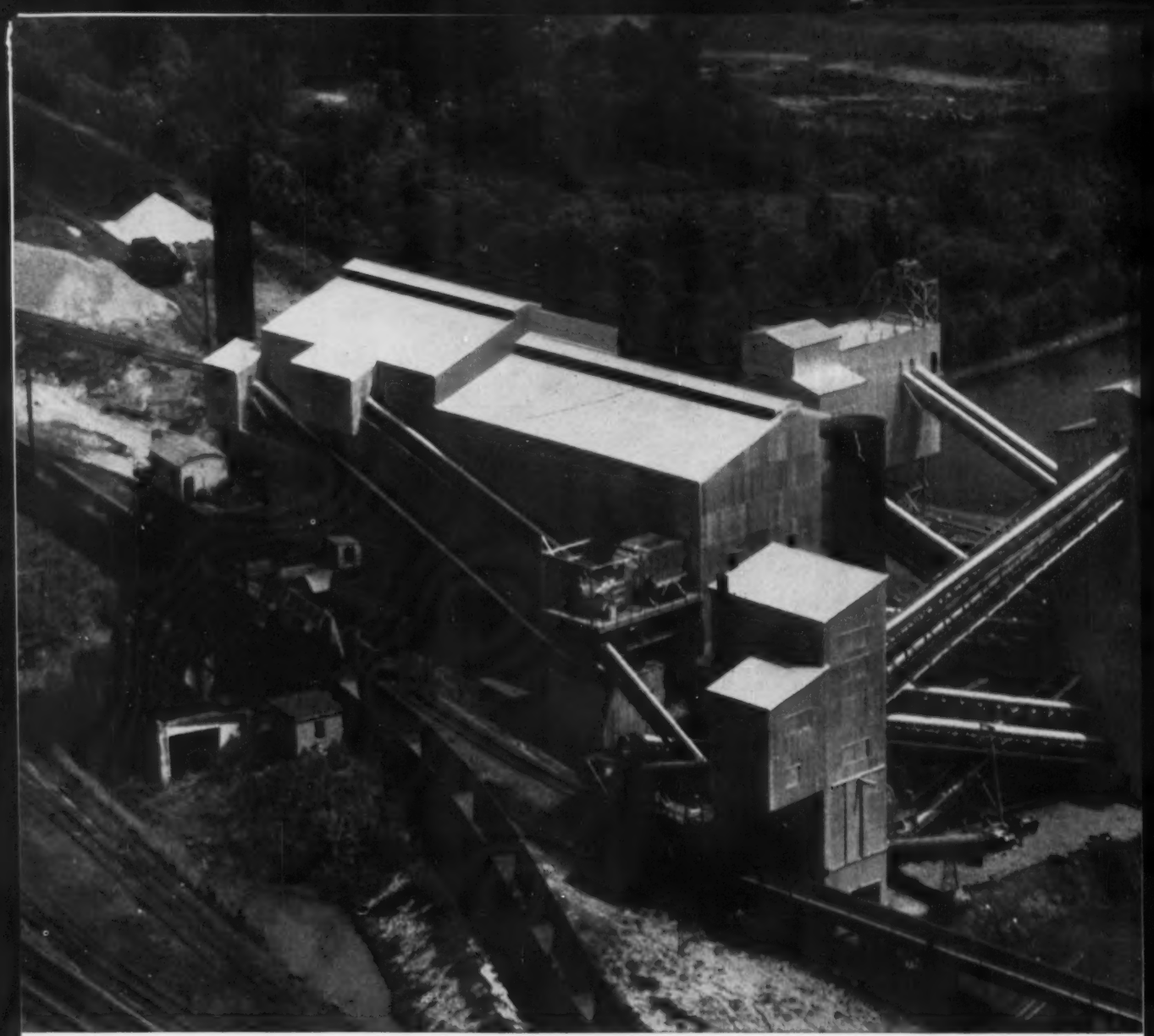
*Reg. Trademark U.S. Pat. Off.

Lectromelt*

McGRAW EDISON

CANADA: Canefco Limited, Toronto . . . ARGENTINA: Master Argentina, Buenos Aires . . . ITALY: Forni Stein, Genova . . . ENGLAND: Electric Furnace Co., Ltd., Weybridge . . . GERMANY: Demag-Elektrometallurgie, GmbH, Duisburg . . . SPAIN: General Electrica Espanola, Bilbao . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Stein & Roubaix, Bressoux-Liege . . . JAPAN: Daido Steel Company, Ltd., Nagoya

STANDARD SIZES UP TO TWO HUNDRED TONS CAPACITY



New 2400 tpd Sinter Plant

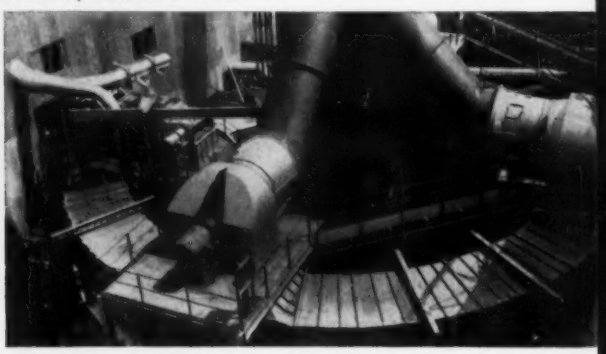
This Armco Steel Corporation installation at Ashland, Kentucky, is the first of several Dravo-Lurgi sintering plants to be completed. The new plant will make it possible to reclaim accumulated stores of sludge and flue dust, and will increase the efficiency of the blast furnace operation.

Built to fit into extremely limited space, the plant will receive and store a day's supply of raw materials in eight hours. The actual sinter machine has a maximum bed depth of 13½ inches and an active hearth area of 807 square feet. The pallets are 8 feet 3 inches wide and travel at a top speed of 17½ feet per minute.

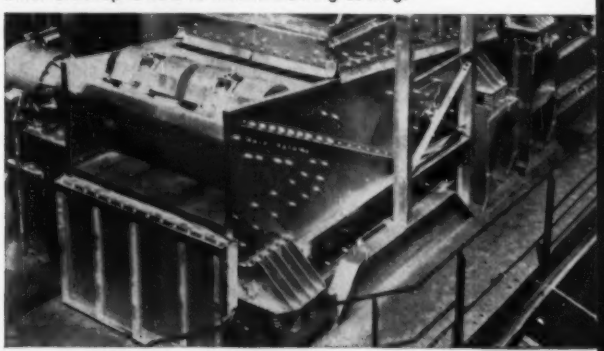
For details on how Dravo-Lurgi design

The Dravo-Lurgi sinter machine at Armco is also designed to sinter Labrador ore fines. Ignition is accomplished in 30 seconds by means of a large number of burners. Careful grading of burner sizes assures uniform ignition.

Specially designed breaker is long wearing and easily maintained. Arms are tipped with a tungsten carbide composition for long wear. Sinter cake is broken up with minimum production of fines.



Circular cooler uses large volume of low velocity air which lowers temperatures to approximately 200F at discharge end. Has no plows or scrapers, no water quenching—sinter breakup is held to minimum during cooling.



Dravo-Schenck screens and conveyors unload sinter into cooler, removing fines which could retard cooling. These screens and conveyors are designed for the economical handling of hot and abrasive materials.

in operation

and construction facilities can help you increase blast furnace production and reduce blast furnace costs, write DRAVO CORPORATION, PITTSBURGH 22, PA.

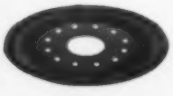
DRAVO

CORPORATION

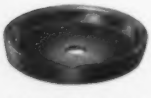
VALUE ANALYSIS where it really counts ... during design!

C/R Shaft Type Oil Seal

C/R Standard End Face Seal



C/R Sirvene Diaphragm



C/R Sirvis Molded Cup

C/R Rawhide Beveled Gear

Here's an expert at work, saving you money at the right time — during design. Like all C/R sales engineers, he's an experienced, well-trained representative whose knowledge springs from a solid engineering background. His ability to sit down with you during the design phase will help develop the most efficient and economical solutions to your problems.

For example, he will often suggest design modifications that may save substantial production costs. Again, he will advise against specifications or seal types which he knows from experience will lead to service problems and user dissatisfaction. His personal "value analysis" of your fluid sealing problems, backed by the quality of these Chicago Rawhide products, can save you money. Welcome him when he calls to see you.

CHICAGO RAWHIDE MANUFACTURING COMPANY
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Offices in 55 principal cities. See your telephone book.
In Canada: Manufactured and Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Brantford, Ontario.
Export Sales: Geon International Corp., Great Neck, New York

C/R
CHICAGO RAWHIDE

Long-Range Field Burial Study Probes Underground Corrosion

To date, information on how buried metals behave has been sketchy.

Now in its final stages, the 36-year NBS field burial study provides a detailed picture.

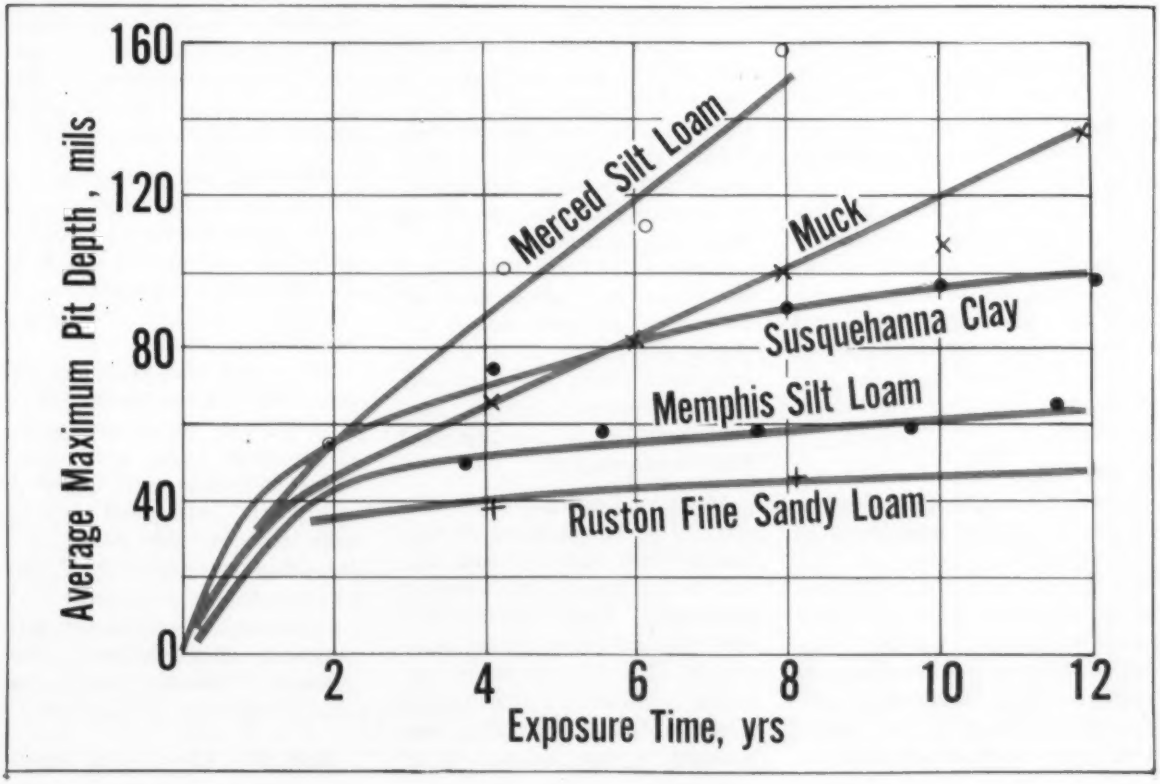
▪ For more than 45 years, the National Bureau of Standards has been doing research on corrosion of underground structures. An important phase of the work, now almost complete, is a broad field-burial program. Its purpose is to determine the specific behavior of metals and coating materials when exposed for long periods in a wide range of soil environments.

The field burial program was initiated in 1922. Data were obtained on nearly 37,000 specimens representing 330 kinds of materials. These were exposed for periods up to 17 years in 95 different types of soil at 128 test sites throughout the United States.

In the course of its field studies, the Bureau had the cooperation of 17 technical and government organizations, 103 manufacturers who supplied materials, and 105 utility companies and municipalities that provided test sites and labor.

How Corrosion Occurs — Most underground corrosion is the result of electrochemical reactions. For such reactions to occur there must be a potential difference between two points of the metal in contact with an electrolyte. Current flows from the anode area through the electrolyte to the cathode and returns through the metal to complete the circuit. The anode area cor-

How Plain Carbon Steel Stands Up



Effects vary with soil type, drainage and the amount of aeration.

rodes through loss of metal ions to the electrolyte.

It sounds simple. But correlation of the theory with actual corrosion of metals underground is actually quite complicated. Many factors determine the amount or rate of corrosion, and whether it is localized or uniformly spread over the metal surface.

Localized, pitting-type corrosion is especially damaging in pipelines and other structures that store or carry fluids; but for loadbearing structures, such as piles, the main concern is with overall loss in weight or strength.

Main Causes—Chief contributing factors are the presence of moisture, oxygen and soluble salts in the soil, and permeability of the soil to these substances.

Moisture provides the soil electrolyte, which consists of hydrogen and hydroxyl ions from the water itself and a variety of ions from salts dissolved from the soil. These ions determine electrical resistivity, as well as chemical properties of the soil. Oxygen, from the air or from oxidizing compounds in the soil, stimulates corrosion by combining with metal ions.

If the resulting corrosion products are soluble or otherwise removed from the anodic areas, corrosion proceeds. If they accumulate, they may protect the metal against further corrosion; or, if they are more cathodic than the bare metal, they accelerate and localize corrosion.

Also Affect Current—Other factors which determine the amount of current that flows from metal to soil are the size, number, and location of anodic areas. Galvanic corrosion may result because of contact between dissimilar metals. Also, local differences in soil packing may produce oxygen concentration cells; regions with less oxygen are anodic with respect to those with more.

Bacteria must also be considered, particularly the anaerobic sulphate-reducing bacteria that convert soluble sulphates to sulphides. These are most active in poorly aerated swamp areas where the pH of soil water is about neutral and there are enough organic matter and soluble sulphates for the organisms to thrive.

Soils Vary Widely—The 95 soil types used in the field program show wide differences in physical and chemical properties. In texture, the soils vary from soft, spongy peats through soft clays, loams, and silts to coarse-grained sands and gravels. Resistivity ranges from 51 ohm-cm, about that of sea water, to a value over 1000 times larger, indicating the absence of soluble salts.

Chemically, the soils range from extreme acidity (pH 2.6) to high alkalinity (pH 10.2) and from highly oxidizing to definitely reducing. In addition, there are striking differences in the kinds and amounts of soluble salts present.

In 1922, samples of commonly used ferrous pipe materials were buried at 47 test sites. In 1928, similar ferrous materials and some copper and copper alloys were buried in a new group of sites; and a burial program was also started on bituminous coatings.

Between 1932 and 1941 further burials were made of low- and high-alloy irons and steels, copper and copper alloys, zinc, alloys of lead, lead-coated steels, galvanized iron, tin-coated copper, various non-bituminous organic coatings, and asbestos cement pipe.

Minimum Disturbance — As a rule, 10 or 12 specimens of each material were buried at each site, and two specimens were removed periodically. Thus, corrosion data were obtained for maximum exposures of 12 to 17 years for all materials. Specimens were usually placed in a single row. They were arranged so that two samples of each material could be removed without disturbing the specimens still in the ground.

Exhumed specimens were treated in the Bureau's corrosion laboratory by chemical and mechanical procedures to remove the corrosion products without significant loss in weight or mechanical injury to the uncorroded metal. Measurements of weight loss and pit depth were then made.

Plain Ferrous Metals—Plain ferrous pipe materials represented in the field tests were openhearth iron and steel, hand-puddled and mechanically puddled wrought iron, bessemer steel, plain carbon steel, pit cast and centrifugally cast iron.

The field test results for these metals, as well as those for low-alloy steels, show very clearly the controlling influence of the soil on the character of the corrosion. All the plain ferrous materials showed similar corrosion patterns when buried in the same soil, but the type of corrosion varied widely in different soils. In general, a high initial corrosion rate decreasing after a few years to almost complete cessation is found in well drained soils with high resistivities. The corrosion rate is nearly constant after the first year or two in poorly drained soils with low resistivities.

Alloy Steel and Iron—Data were obtained on the following low-alloy steels: copper-bearing steel, copper-molybdenum openhearth iron, nickel-copper steels, and steels containing from 1 to 6 pct Cr with and without molybdenum.

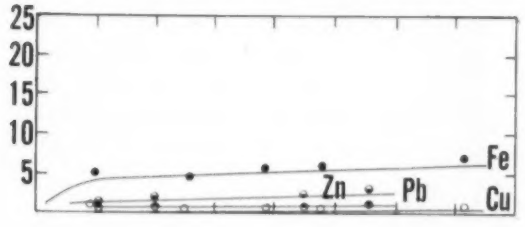
The general effect of alloying elements was to lower the initial rate of weight loss, but to increase the initial rate of pitting, as compared with plain carbon steel. Except in very poorly aerated and reducing soils, however, the pitting rate diminished more rapidly for the alloy steels than for plain steels.

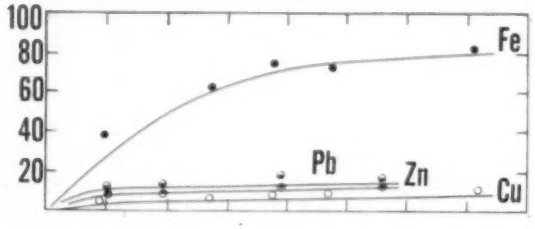
Chromium and molybdenum were particularly effective in reducing the corrosion of low-alloy steels in the most corrosive site, a cinder fill.

High Alloy Effects—The higher-

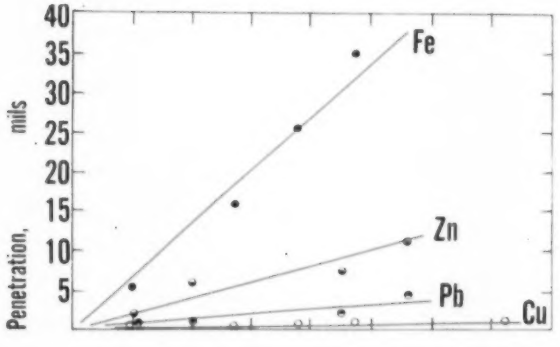
How Buried Metals Reacted in...

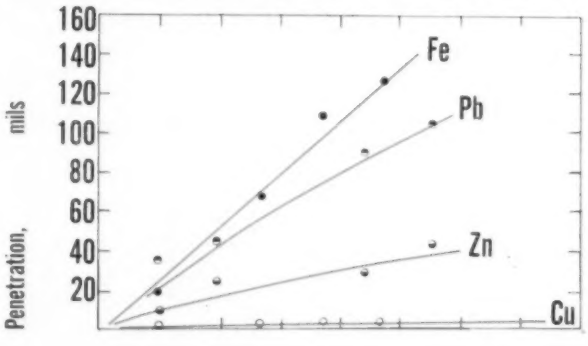
...Well-Aerated Cecil Clay Loam



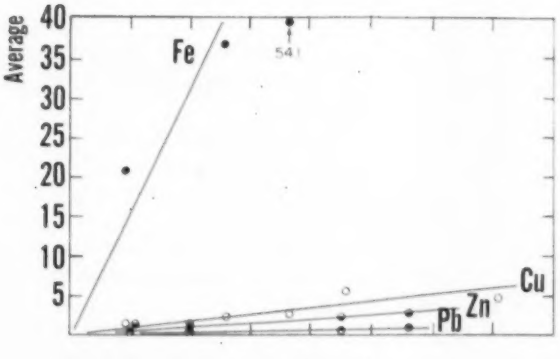


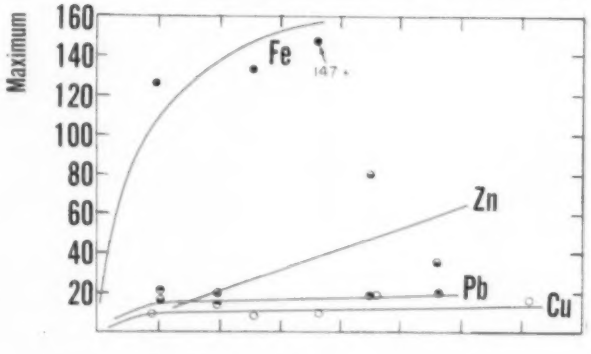
...Poorly Aerated Lake Charles Clay



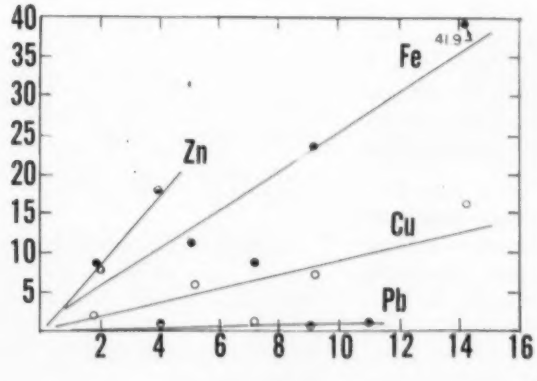


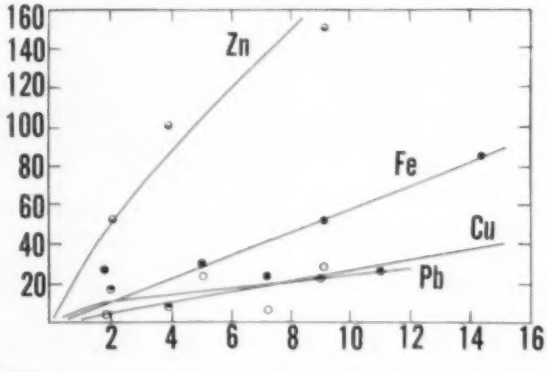
...Alkaline Docas Clay





...Rifle Peat With High Sulphate



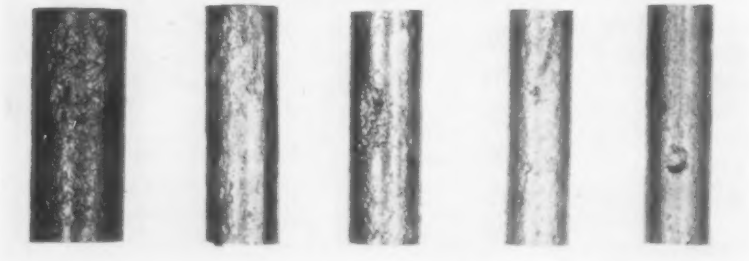


Time, yrs

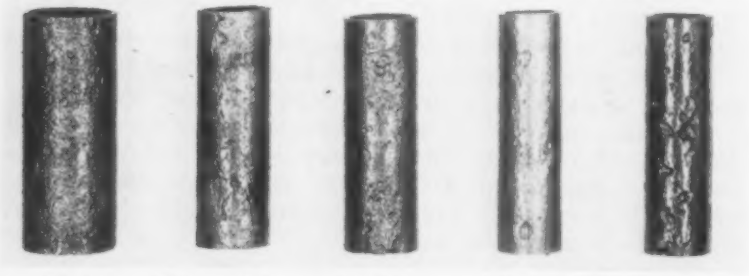
Corrosion After 14 Years in . . .

. . . Acadia Clay (Spindletop, Tex.)

. . . Cecil Clay Loam (Atlanta, Ga.)



. . . Hagerstown Loam (Loch Raven, Md.)



Plain Carbon Steel | **Wrought Iron** | **Cu-Mo Openhearth Iron** | **2 pct Ni, 1 pct Cu Steel** | **Plain Cast Iron**

alloy steels tested contained up to 18 pct Cr, with and without nickel and molybdenum. Increasing the chromium content caused a gradual decrease in weight loss, but pitting was accelerated by chromium contents beyond 6 pct. The tendency of high concentrations of chromium to accelerate pitting appears to be neutralized by adding enough nickel to produce steels of the austenitic type.

Field tests on low-alloy cast irons containing up to 1 pct Ni, with and without copper, showed that the presence of such amounts of nickel or copper had no significant effect in any of the soils up to the amounts used. Austenitic cast iron was considerably more resistant to corrosion than plain cast iron.

Copper, Brass, Lead—Results on copper and copper alloys indicate that tough-pitch copper, deoxidized copper, copper containing up to 3 pct Si with and without tin, and red brass (15 pct Zn) all behave essentially alike. Soils including cinders, with high concentration of sulphides, chlorides, or hydrogen ions were found the most corrosive toward these materials.

The corrosion rate of Cu-Zn alloys with more than 27 pct zinc increased about as the amount of zinc and was generally accompanied by dezincification—except in soils with moderate or high concentrations of sulphide. In sulphide soils the corrosion rate decreased with greater zinc content and dezincification did not occur.

Chemical, antimonial, and tellurium lead showed no appreciable differences in corrosion behavior. The corrosion rate of each tends to increase with decreasing aeration of the soil. Organic acidity was corrosive; but in soils high in sulphates, chlorides, or carbonates, the corrosion products formed a protective coating.

Metals Compared—To compare the corrosion resistances of plain iron and steels, copper, lead, and zinc, the soils were divided into four groups: well aerated, poorly aerated, alkaline, and high in sulphide or sulphate. Then corrosion-time curves were plotted for specimens buried in representative soils of these types.

It was found that plain iron or steel corroded much faster than the other metals in all soils except the one high in sulphate. In this soil, zinc corroded more than steel; but only lead could be expected to withstand it long.

In the well aerated and poorly aerated soils which are representative of most of the United States, copper showed the highest corrosion resistance. This superiority is especially marked in the poorly aerated environment, where the corrosion rates of iron or steel, zinc, and lead are proportional to time.

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Process Adds Economy To Electric Furnace Smelting

Don't be surprised if electric arc smelting of iron becomes popular in the next few years.

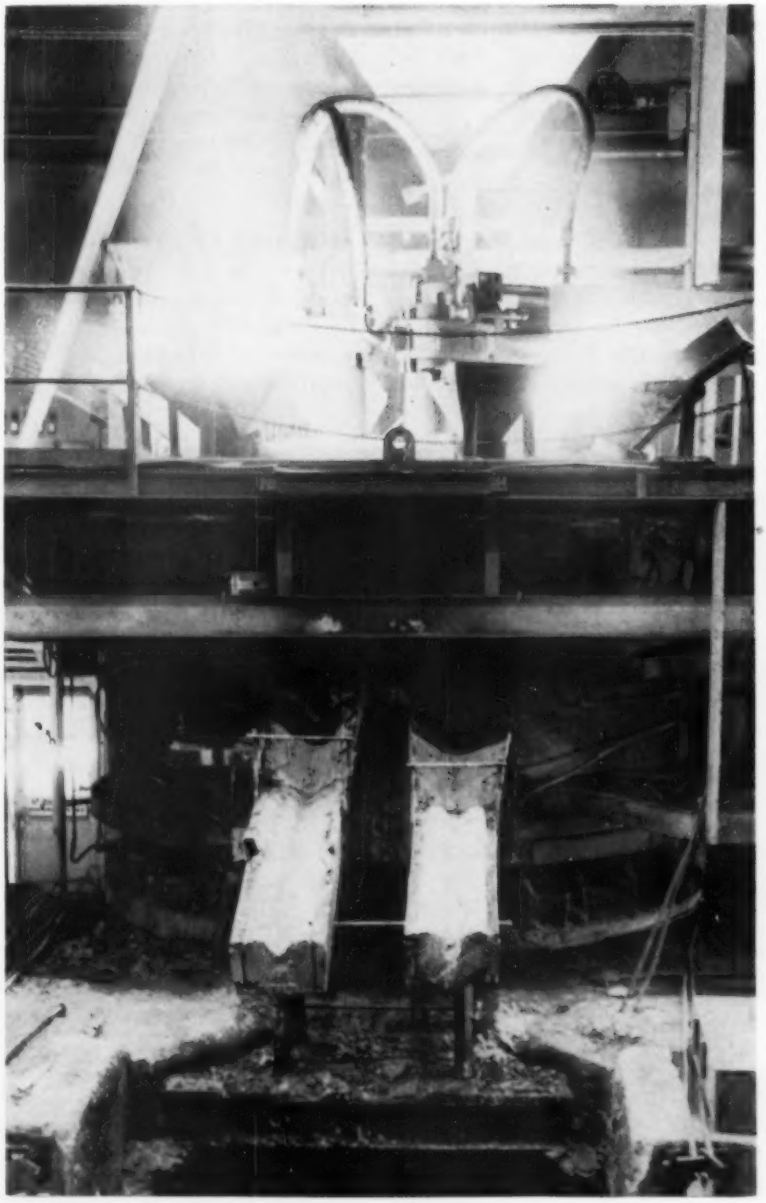
A smelting technique that uses a direct-fired rotary kiln for partial pre-reduction of iron ore before charging to an electric arc furnace may turn the trick in the U.S.

▪ Electric furnace smelting in the U. S. has been mainly concerned with preparation of materials in the higher value brackets. But its horizons are likely to expand. There's a good chance it may be used economically to reduce iron ore, to serve as the raw material process base for a steel industry.

The innovation that could bring about the change is known as the Strategic-Udy direct iron reduction process. Sponsored jointly by Strategic Materials Corp. and Koppers Company, Inc., the process was invented by Dr. Marvin Udy who reported it at the recent meeting of the AISE in Cleveland.

Stresses Economies—The Udy report combined a technical review of the process with a rundown of salient economic factors likely to be of major interest to the steel industry.

According to Dr. Udy, electric furnace smelting in the past was attractive only if one or more basic economic factors could be satisfied. Cited were such factors as 1) power cost below 6 mils per kwhr. 2) coking coal costs above $15 per ton, 3) plant capacity under 1000 tons per day, 4) scrap costs above $50 per ton, 5) a high quality iron ore. New techniques, he said, have altered past economic factors considerably.



PLANT FURNACE: The Niagara Falls plant uses a 1000-kva electric furnace. Slag tap is on the left; metal tap is on the right.

Marked Improvements — Now, for example, power requirements may be halved—thus doubling furnace capacity and cutting both capital expenditures and operating costs. Control of material quality has improved to the point where subsequent costs in making steel from

smelted iron have been appreciably reduced. Add to this the fact that it is now possible to use cheaper ores that are not suited for blast furnace operation.

The sum total of such inducements, according to Dr. Udy, makes it "quite likely that the North American continent will install several iron smelting electric furnaces within the next few years." And the Strategic-Udy process ties in directly with electric arc smelting.

Conserves Heat—The process is a smelting technique that uses a direct-fired rotary kiln for partial pre-reduction of iron ore before charging to an electric arc smelting furnace. Much of the heat needed for pre-reducing and preheating the ore in the kiln is supplied by burning carbon monoxide produced from the reduction reactions of the arc furnace. Essential equipment for the process is shown in an accompanying flow diagram.

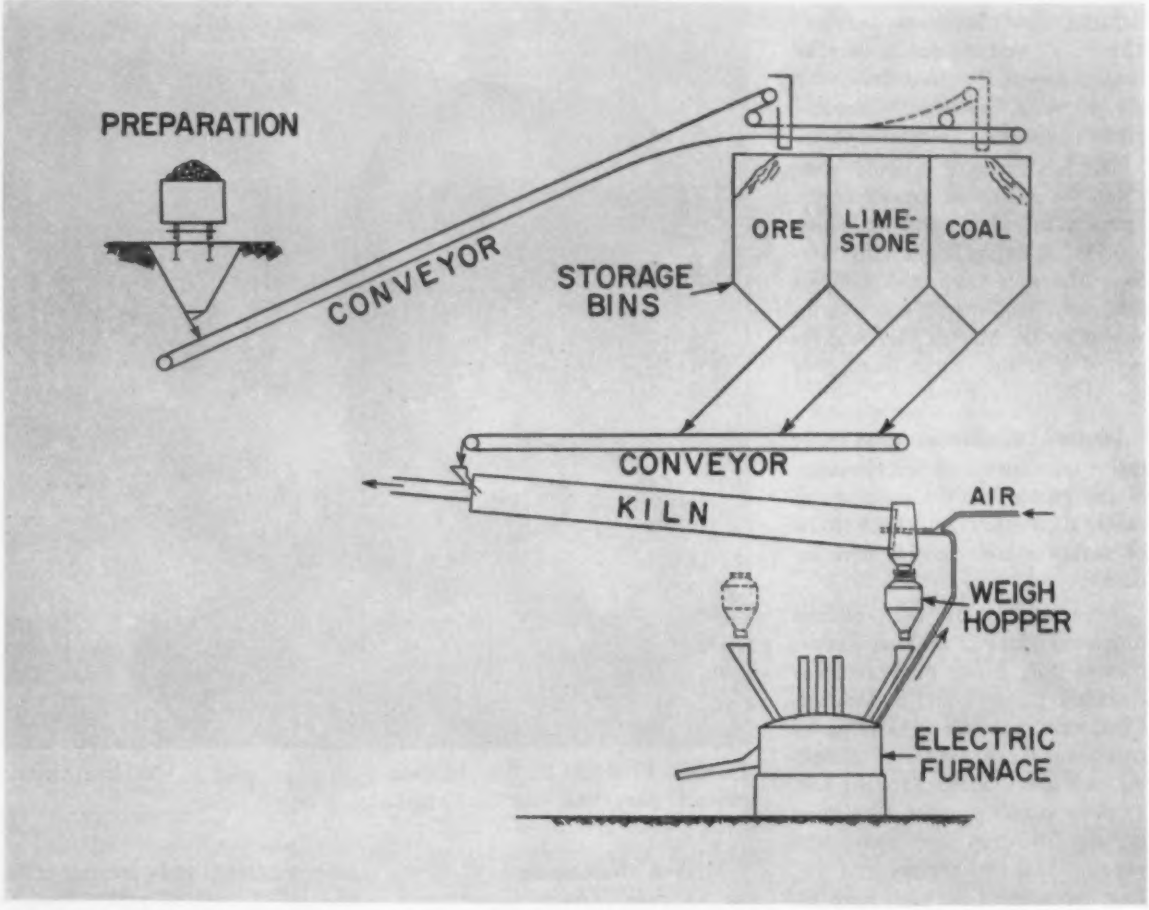
Here's how it works. A mixture of iron ore, flux, and coal is continuously fed to the rotary kiln. During the operation, the iron ore is heated, calcined, and pre-reduced. The flux (limestone or dolomite) is calcined and combined chemically with the ore. Maximum temperature of the free-flowing discharge from the kiln is controlled between 1800° and 2300°F, varying for different ores.

Reduction Pays Off — Sufficient coal is fed to the kiln to accomplish the two-step reduction needed. Coal not used in pre-reduction or burnt in the kiln is "coked" in the kiln. It passes out with the pre-reduced material for use as a preheated reductant in the electric smelting step.

Saving thermal and electric energy, hot pre-reduced ore from the kiln is charged directly to the smelting zone of the furnace through insulated feed control bins and controlled feeders. The process uses an open bath technique. Electrodes are set from ½ in. above the molten slag to 3 in. submerged in the slag, depending upon the needs of the particular operation.

Free Gas Flow—Charge material enters the periphery of the furnace and forms its own angle of repose. The space above the electrodes is open and offers no restriction to the flow of carbon monoxide gas produced during the reduction reaction.

The molten bath in the furnace provides a constant electrical resis-



FLOW DIAGRAM: Mixture of iron ore, flux, and coal is fed to rotary kiln. Ore is partially pre-reduced before charging to furnace. Process saves heat and electrical energy, uses open bath technique.

SINTER: The hot sinter from kiln is fed through conveyor hoppers into the reaction zone of the furnace.

tance, permitting high and uniform power inputs. With this technique, fines can be charged without interference with the operation.

Controls Carbon—The reaction between the coal and the iron oxides in the molten bath is extremely rapid. Carbon monoxide gas is quickly liberated. It is collected and burnt in the kiln to supply a major portion of the heat of the kiln.

Carbon content may be varied from pig iron at 3.5 pct C to semi-steel at 0.2 pct C with comparative ease. Accurate control of slag composition permits selective smelting to remove such contaminating elements as titanium, manganese, phosphorus, chrominum, and nickel. (These elements can be recovered for credit if present in sufficient concentration.)

Saves Iron — The process also results in high recovery of iron. Where exact carbon control of the iron is required, finishing additions of reductant can be introduced in the smelting furnace. An alternative is to handle carbon adjustments by the addition of iron ore.

The balance of the operation, according to the developers, is similar to conventional smelting techniques. The iron and slag are tapped intermittently and handled in the conventional manner.

Process Tested—For putting the process in operation, a prototype plant has been set up at Niagara Falls, Ont. This plant is equipped with three 1000-kva, 3-phase electric smelting furnaces, a large gas or oil-fired rotary kiln with dust-collector and fan, as well as crushing, drying, conveying, and storage bin equipment. These are supplemented by two 15-ton bridge cranes and an auxiliary 5-ton hoist. Complete ladle, molds, chills, and sundry equipment are also available.

Based on test runs at the Niagara Falls plant, Dr. Udy was able to report in comprehensive fashion on the process' material and energy requirements. He also provided figures on rotary kiln, electric furnace, and coal requirements. He concluded with an analysis of manufacturing costs for an operation utilizing a typical purchased ore at a Great Lakes port, a purchased coal, and purchased oil and power.

Because of flexibility and low capital cost per ton of iron, Dr. Udy believes the process can be adapted to cold metal shops where molten iron would be an advantage. The process can be developed on a unit basis to the production of 50 tons of iron per day and upward and permits use of scrap.

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Calculator Gives Fast Check on Inadequate Depreciation Costs

Due to inflation, depreciation charges are usually too low. Profits are then overstated and overtaxed.

Here is a quick way to find out what this costs your company each year.

How much did outmoded depreciation policies cost your company last year?

With inflation, it's possible under conventional accounting for a company to pay out more in dividends and taxes than it realistically earns.

Fast Check — A "short-hand" method for telling how much a company has overstated profits by understating depreciation has been made available by the National Automatic Tool Co., Richmond, Ind. The method uses the consumer price index in assigning the inflation factor.

Once inflation is charted, there are certain things a company can do to overcome the effects of inadequate depreciation. Several keep two sets of books: One on the conventional basis; another to get a true picture of company operations.

The latter set of books puts down depreciation and other "historical" figures in current dollars. They show profits, retained earnings and reserves as they really are.

How To Use Data—This system yields more meaningful information on which to base decisions concerning dividends, pricing and cost forecasting. Also, it has the advantage of graphically showing management, stockholders and labor just how much inflation costs.

You can't make such a detailed study with Natco's Capital Erosion Calculator. But you can take a fast reading on how much your company's profits are overstated because of inadquate depreciation.

That's just what National Automatic Tool Co. had in mind when it offered the calculator. For some years Natco's president, N. M. ("Dutch") Forsythe, has been more than casually concerned with the depreciation problem.

What Depreciation Costs — Interviews with leading economists, accountants and long-time advocates of depreciation reform such as the Machinery and Allied Products Institute convinced him:

1. Inadequate depreciation is a more serious problem than most people suspect. Industry's under-

How to Use the Capital Erosion Calculator

A	**What was your company's total depreciation expense last year?**	**$150,000**
B	**Roughly estimate the average age of your plant and equipment as of January, 1958**	**12 years**
C	**Based on the above, select the corresponding inflation factor (see chart below)**	**147 Pct**
D	**Multiply C times A**	**$220,000**
	Overstatement of Profits, D minus A (due to understated depreciation)	**$70,000**

1958 Inflation Factors Based on Consumer Price Index

4 yrs.	107 Pct	10 yrs.	119 Pct	16 yrs.	176 Pct
6 yrs.	108 Pct	12 yrs.	147 Pct	18 yrs.	204 Pct
8 yrs.	119 Pct	14 yrs.	163 Pct	20 yrs.	203 Pct

HOW IT WORKS:

This example shows a company with sales of $5 million in 1957 which reported a $200,000 profit after income taxes. The depreciation charge for the year came to $150,000 on depreciable assets of about 3 million.

A comparison of the latter two amounts showed the company's overall average depreciation rate to be 5 pct (20-year life).

Based upon the depreciation reserves accumulated to date in comparison with the overall average life of 20 years, the company president estimated the present age of the plant and equipment to be about 12 years.

A more accurate method of computing depreciation understatement is shown in the other chart. Adjustment is on a yearly basis.

statement of depreciation ran to about $7 billion last year, all taxable!

2. There are widespread misconceptions both in government and industry as to what depreciation really is, what's wrong with it and what should be done to correct it.

Education Needed—To spell out the dangers of inflation and understated depreciation Natco published its Capital Erosion Calculator. It's not the company's first effort in this direction but rather the latest in a two-year educational program.

Reasoning behind the program is that if management can get even a rough idea of what depreciation costs then it will take steps to solve the problem. Part of the program includes offering the calculator and informative literature on the subject free of charge to those interested in learning more about it. The term "Capital Erosion" means losing real capital because of inflation. It results primarily from the failure to replenish capital fully by means of adequate depreciation.

The oft-heard term "replacement depreciation" is judged meaningless because machines are rarely, if ever, duplicated. Moreover, the real purpose of depreciation is to recover capital—not to replace machines.

Use Present Dollars—The company also thinks the only realistic approach to the "useful life" concept is one which corresponds as closely as possible to the actual life of a machine. Further, it feels that fast "incentive" amortization will not bring long-range solutions.

Natco says that the only practical guide to depreciation allowances is the one already in use. Original purchase prices — but restated in today's dollars.

The consumer price index is built into Natco's Capital Erosion Calculator. By inserting your company's figures into the form as shown here, a rough estimate of the extent to which your profits may be overstated can be had in about two minutes.

For a More Accurate Check

Year of Acquisition of Plant and Equipment	Plant and Equipment Remaining at December 31, 1957, by year of acquisition*	Inflation Factor, Pct	Plant and Equipment Balance in Today's Dollars (Factor times Balance)
1938	$ 30,000	203	$ 61,000
1939	40,000	206	82,000
1940	87,000	204	177,000
1941	164,000	194	318,000
1942	196,000	176	345,000
1943	60,000	165	99,000
1944	90,000	163	147,000
1945	630,000	159	1,002,000
1946	820,000	147	1,205.000
1947	368,000	128	471,000
1948	61,000	119	73,000
1949	28,000	120	34,000
1950	29,000	119	35,000
1951	43,000	110	47,000
1952	22,000	108	24,000
1953	37,000	107	40,000
1954	59,000	107	63,000
1955	71,000	107	76,000
1956	79,000	105	83,000
1957	242,000	102	247,000
		Total	**$4,629,000**

Average depreciation rate 5 Pct.

(Be sure to take into account higher rates which might have resulted from accelerated depreciation and amortization.)

Depreciation provision in today's dollars $221,000

* Exclude fully depreciated plant and equipment.

How To Estimate—All you need do is put down last year's depreciation expense. Then you multiply it by an inflation factor based on a rough estimate of the average age of your plant and equipment as of January 1958. The difference between the depreciation charged set aside and the adjusted figure will show the extent to which current profits are overstated.

To figure your depreciation understatement more accurately, Natco suggests the method shown in the other table. Here you adjust for inflation on a yearly basis. The total value of plant and equipment expressed in today's dollars is then multiplied by your average depreciation rate. The result is a depreciation provision based on today's dollars.

As in the first example, the difference between the adjusted depreciation figure and actual depreciation charged shows how much profits are overstated.

Long-Range Effect — Regardless of which method you use, remember that the figure you come up with reflects the overstated profit for only one year. The cumulative effect on retained earnings over several years can really add up.

One leading company found after detailed study that retained earnings reported over ten years as $39.5 million were actually only $6.5 million.

For a method of setting up company books to keep tabs on what is really happening to profits and capital, Natco also makes available the booklet "Price-Level Changes and Financial Statements — Basic Concepts and Methods," published by the American Accounting Assoc.

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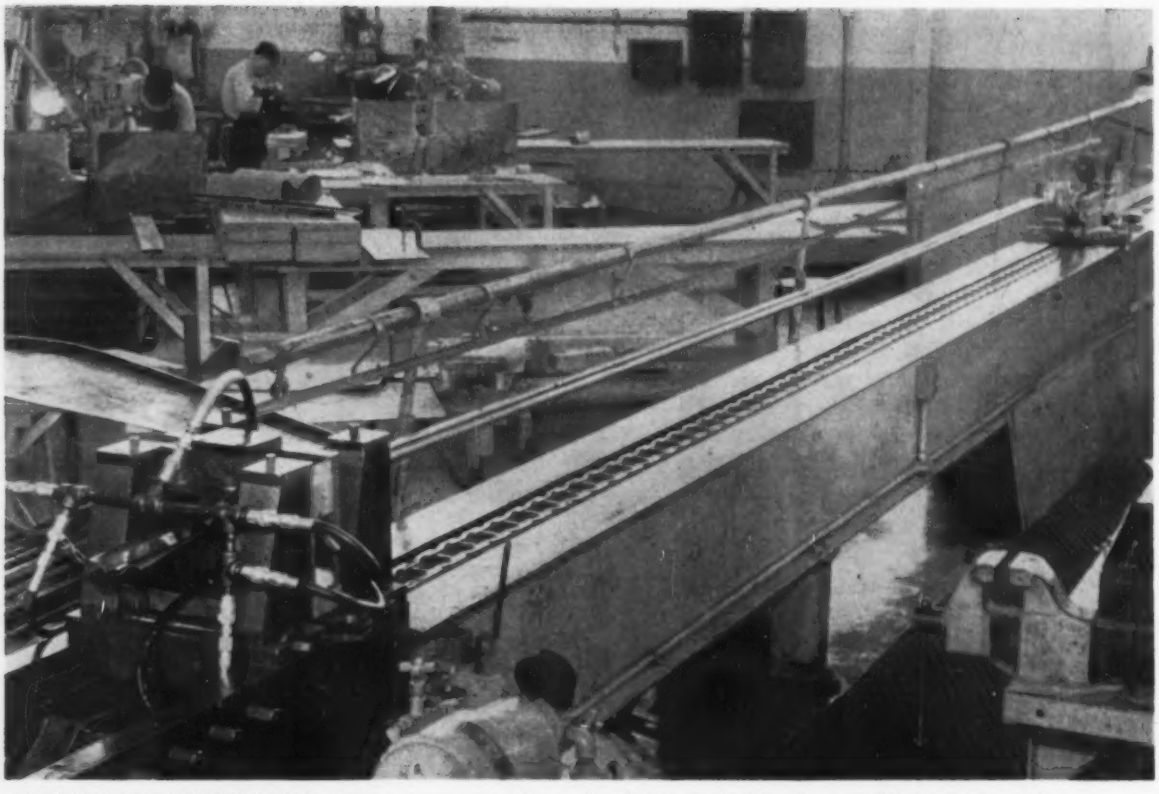


ADJUSTS TO THICKNESS: Constant-pressure draw die forms material of nonuniform cross-section.

Draw Die Forms Tapered Parts

By **Charles Myers**—Mfg. Research Engineer, Boeing Airplane Co., Seattle

Even a slight taper causes trouble in a rigid forming die.

So when a taper is designed into a part, new tooling has to come to the rescue.

One draw die does the job with movable segments that exert constant pressure.

■ Advanced aircraft design calls for integral structures to provide a high strength to weight ratio. However, variations in cross - section throughout a part length bring up tooling problems.

Aiming to minimize these problems, Boeing Aircraft Co. has successfully draw formed and stretch straightened material with nonuniform cross-section. The new production techniques can be used on parts that have constant gage, tapered gage, or a combination of the two.

Die Segments Move—Solving one of the tooling problems is a draw die with movable segments operated by a constant-pressure hydraulic system. The die maintains a constant ironing and trapping pressure during draw forming.

Variation in material thickness serves as a cam to operate the die segments, thus keeping close tolerances. The hydraulic system not only insures constant dimensions, but actually produces a straighter part than possible with a conventional die. There's no excessive pressurizing of faults in the tapered material to set up curve producing stresses.

In testing the process Boeing chose a roll-tapered 7075 aluminum to be formed into hat-sectioned stiffeners. The part tapers from 0.090 to 0.045 in. thickness with 5.5-in. width and 259-in. length. While tolerances on the formed part called for ±0.030 in., the new process held the part to ±0.010 in.

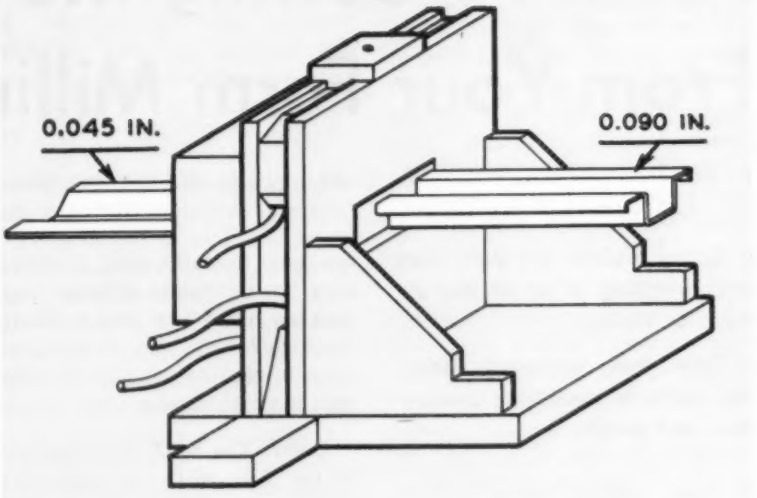
Preform First—The first step is to preform the material to 45° bends in a conventional draw die. The preformed part is then drawn

to finished shape and dimensions with ironing pressure at 1500 psi in the new draw forming tool.

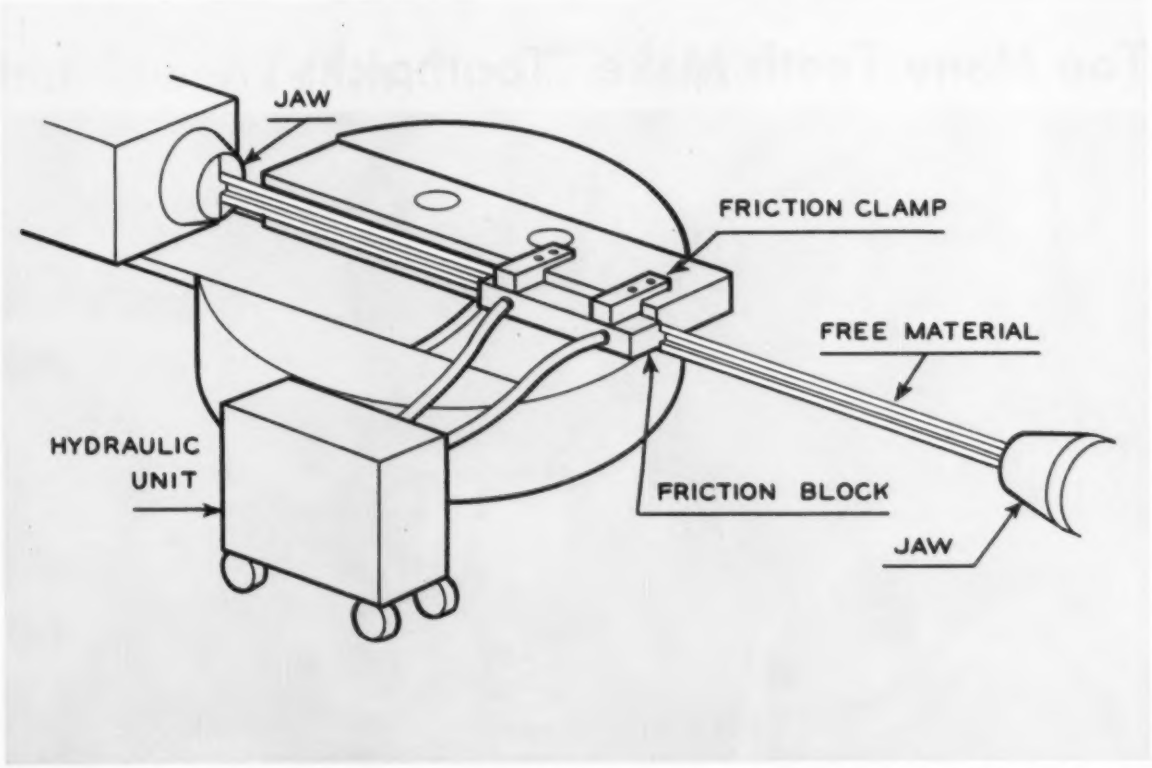
After draw forming, the part is solution heat treated. The resulting warpage requires straightening. Since the nonuniform cross-section precludes conventional stretch straightening, the part is processed on a Cyril Bath Rotoformer with a hydraulically operated friction clamp.

The formed section is clamped at each end by tension jaws and passed through a female straightening die on the Rotoformer. Friction clamping pressure, applied at predetermined stations, compensates for the variation in thickness. The part is then stretched from both ends to about 2 pct elongation before the clamping stations are released and tension is relaxed.

Releasing the clamps before relaxing tension prevents elastic recovery from producing deflections at the clamping stations.



USES CAM CONTROL: Material thickness serves as a cam to hydraulically operate die segments, thus maintaining constant forming pressure. There's no pressurizing of faults to set up curve producing stresses.



STRAIGHTEN WITH TENSION: Friction clamp applies pressure as formed section is stretched about 2 pct.

Are You Getting the Most From Your Form Milling Cutters?

By Colin Sharp—Cutting Tool Div., Brown & Sharpe Mfg. Co., Providence, R. I.

Cutter makers and alert users are rewriting a lot of the old rules of thumb.

Their new techniques bring big gains in machining production and profits.

■ There's nothing "matter of fact" about modern form milling cutters. Not if you want them to boost your machining efficiency to the spectacular degree achieved in many plants. More and more, form cutters are doing jobs in one setup that once needed several machining and grinding operations.

The trick with either special or stock designs in form cutters is to use them the right way. It might even be a radically different way than any you've been used to. Many shops find they have to toss out some of the old rules in working with these production tools.

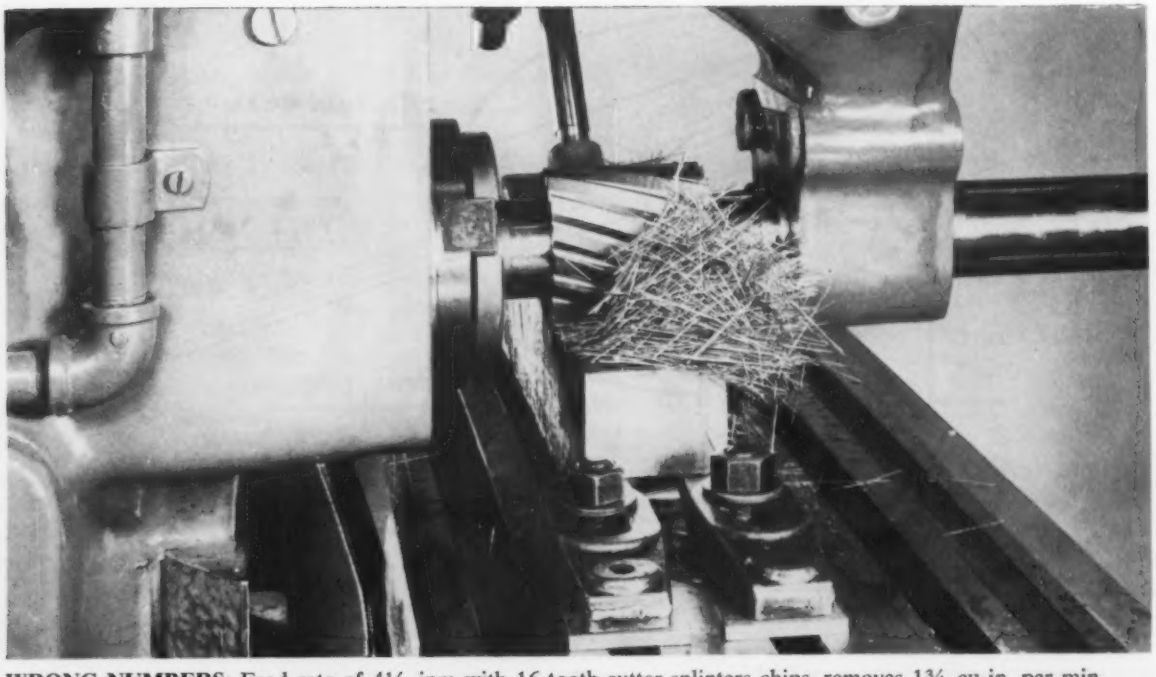
Cutters Too Soft?—One example is the firm that was machining worms from chrome-nickel steel hardened to just over 300 Brinell. It chose double angle thread milling cutters for the job, logically enough. But the shop complained that the cutters were too soft; one worm between sharpenings was the best they could do. Actual machining time, using conventional milling, was 22 minutes per piece.

As is usual on such cutters, the teeth were radical and rather finely spaced. The setup for milling the worms called for a feed per tooth of 0.0003 in. and a speed of about 100 sfpm.

Two Changes Advised — After checking the complaint, the cutter manufacturer made two suggestions. The first advised a switch from conventional to climb milling, which lessens the tendency for cutters to rub and work harden already heat treated material.

It was also suggested that a heavier feed (0.0006 in. per tooth) would be less damaging to the cutting edge. At the same time, it would shorten the machining cycle

Too Many Teeth Make "Toothpicks"...



WRONG NUMBERS: Feed rate of 4½ ipm with 16-tooth cutter splinters chips, removes 1¾ cu in. per min.

to 12 minutes per piece and still yield an acceptable surface finish.

The firm agreed to make these changes with some misgivings. However, it soon found it was indeed getting better parts in about half the former time. Moreover, output from each cutter jumped to an average of 80 pieces between sharpenings.

Here's Another Point — What about the relationship between a form cutter and the milling machine, assuming a machine in good condition and with plenty of power? There's a rule of thumb that one cubic inch of steel can be removed in one horsepower-minute. Actually, the amount of metal you can remove depends on the cutter you select, not on the rule.

For example, a new No. 2 plain milling machine rated at 5 hp was set up to machine a 2½-in. wide block of SAE 1118 steel. A standard, 16-tooth plain milling cutter (3 in. in diam by 3 in. wide with a 1¼ in. hole) was mounted with arbor supports as close as possible.

In taking a cut 5/32 in. deep, at a feed rate of 4½ ipm and a speed of 110 rpm, the cutter chattered severely. The 5-hp machine appeared inadequate to remove even 1¾ cu in. per minute, much less the 5 cu in. indicated by the rule.

Try Fewer Teeth—The trouble lay with improper cutter selection. On a wide cut, a tool with fewer teeth will do more work. To prove this, alternate cutter teeth were ground down a few thousandths of an inch to make them ineffective. Result: the eight - tooth cutter showed no sign of chatter up to 16⅝ ipm, which was as far as the machine would go. Speed and depth of cut remained the same, thus producing an 0.019 in. chip per tooth and a removal rate of 7 cu in. per minute.

When correct cutter choice and use lead to feed increases like this, it's clear that cutters are anything but "matter of fact" items. True, cutters are classed as perishable tools. But the less perishable they can be made through design or use, the more profitably they perform.

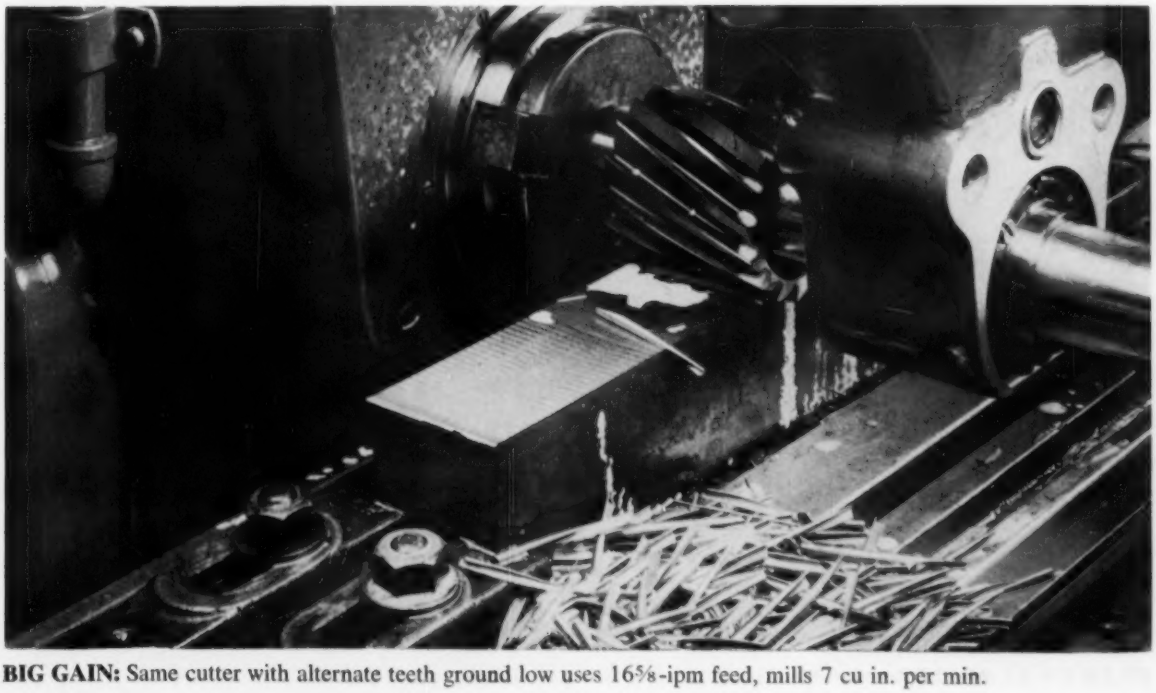
Climb Mill Stainless — Another recent discovery concerns the use of carbide cutters to mill stainless steel and titanium. The former rule specified face milling for best results. It's now known, however, that stainless and titanium can be machined very successfully with the periphery of a carbide cutter or end mill.

On stainless, for example, face milling yields a long chip which gets hot. When it turns yellow or blue with heat, it sticks to the face of the carbide tip and causes rapid failure. (This is contrary to the usual milling of other steels where a blue chip is desirable).

However, climb milling with the periphery of the cutter (as in slab milling) produces a short chip which stays cool and colorless. For best results, use cast iron grades of carbide with positive rakes, and apply a spray mist of coolant.

Just as modern cars need particular grades of fuel, milling machines need the right cutters.

but Fewer Teeth Cut Like This



BIG GAIN: Same cutter with alternate teeth ground low uses 16⅝-ipm feed, mills 7 cu in. per min.

Drill Units Fit Many Jobs

By Ben Eldridge—Metalworking Products Manager, Delta Power Tool Div., Rockwell Mfg. Co., Pittsburgh

Perhaps drill press is a misnomer, because drill units do such a variety of machining jobs.

Far from being just improvisations, drill press setups can speed operations on a production line basis.

▪ Many machining jobs can be done at low cost by adapting drill presses to the work. With standard accessories or special jigs and fixtures, drill presses can grind, polish, mill, rout, and shape, as well as drill and tap.

A drill press performs these operations at high production rates and often with the same precision provided by special-purpose machines. Cycles are short, and loading and unloading is simple.

Drill presses adapt particularly well to short-runs. Being readily portable, they may be moved from one department to another when necessary.

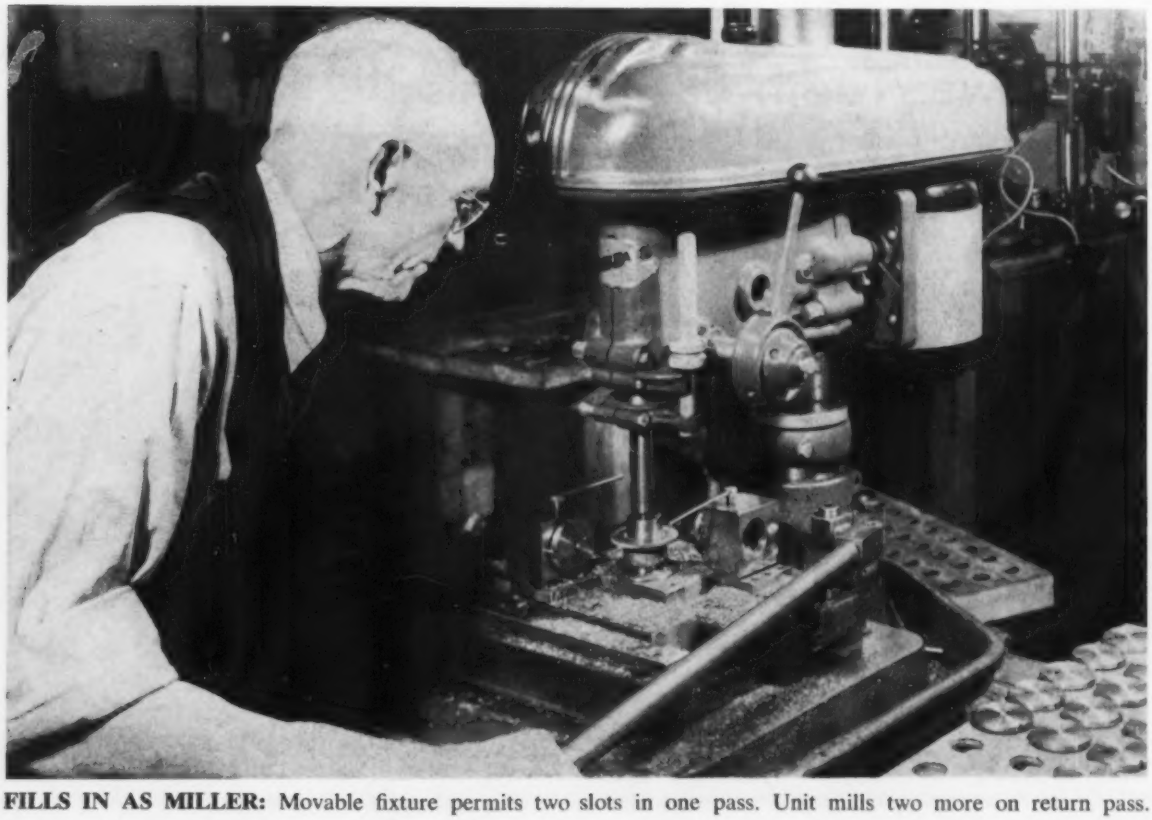
Drilling Work Horse—The single-spindle drill press is the work horse of low-cost drilling. Rotary work tables, automatic-spindle feed attachments, and air or hydraulic devices for positioning and holding the work make these units automatic or semi-automatic.

Two or more single-spindle drill presses can often perform two or more operations together. To drill and countersink a hole, for example, it's common practice to invert one drill head on a column under another.

The top drill press drills as the bottom one, operated by foot pedal, countersinks a hole in the part positioned on the table. Spindle stops are set so that drill and countersink don't meet.

Combine Press Heads—As many as four drill-press heads can be set radially opposed for simultaneous operation. Two or three presses can also be set for drilling holes at acute angles to one another.

For drilling panels where large areas have to be covered, double-hinged swinging arms permit single-spindle heads to cover any point. Another setup for covering large areas is to mount the press unit with



FILLS IN AS MILLER: Movable fixture permits two slots in one pass. Unit mills two more on return pass.

the stand upside down on an overhead track.

Multiple-spindle drill presses provide a number of drill heads mounted over the same table. A different size drill or different tool may be used in each head so that work passes from one position to the next without leaving the table.

Line Up Spindles—As multiple-spindle drill-press tables are made in sections, a piece may travel on the table through many operations in one continuous line. Two to eight spindles are common, while as many as 10, 20, or more operations can be set up.

By mounting fixtures for frequently run small-lot operations on long plates you can reduce setup time. Plates are marked with the part number and stored with the fixtures attached.

When there's a production order for the particular part, the plate is quickly clamped to the table. Drills or tools are mounted in the drill-head chucks to complete the setup.

The same operator may move the piece from one drill head to the next or there may be an operator at each tool. At one plant the operator rolls from tool to tool on a seat fitted with ball bearings.

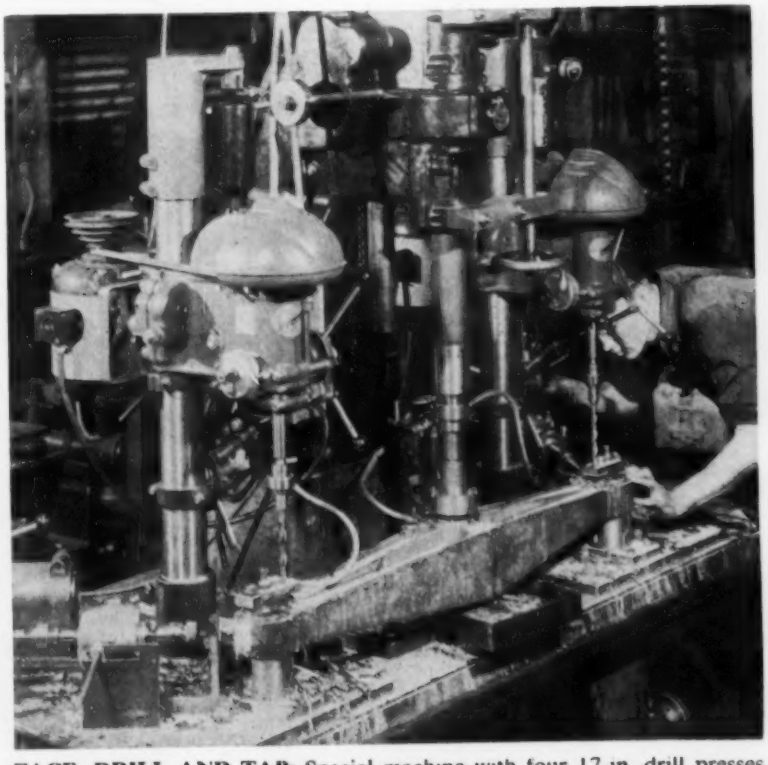
Milling Made Easy—A milling cutter mounted in a drill press head with a feed jig simplifies milling operations. By putting a 1-in. collar and a 1½-in. milling cutter in a drill press chuck, one firm mills a 0.010- by ½-in. stop on the edge of a piece.

With the spindle set at correct height, the piece is pushed past the cutter on a simple sliding jig. The collar holds the width of step to ½ in.

Any grinding or polishing tool that can be held in a chuck or fitted on a taper spindle can be used in a drill press.

With grinding wheels or abrasive cutting disks, instructions concerning speed and guards should be strictly followed. Centrifugal force can cause wheels to break apart even under light pressure.

CUTS SETUP TIME: Plates hold fixtures used in sequence, reducing setup time to a minimum.



FACE, DRILL AND TAP: Special machine with four 17-in. drill presses finishes holes in rear axle beams in 1/6 the normal time.

Setup Controls Sinter Mix

Equipment Weighs and Proportions Continuously

Weighing materials en route to production processes needn't slow down output. An automatic sinter mix control proves this.

▪ An automatic system controls the feed of various materials to a sintering plant. And it does this without halting production. So continuous is the flow that the plant handles some 2500 tons a day.

In use at Jones & Laughlin Steel Corp.'s Cleveland Works, the system automatically weighs and proportions. It mixes just the right amount of iron ore fines with coke breeze and flue dust.

It's Flexible—Key item in this automated mixer is an electrical weighing setup. Supplied by Trans-Weigh Co., Wayne, Pa., this controls flow rates of materials in proportion to each other. Operators can vary ratios, too.

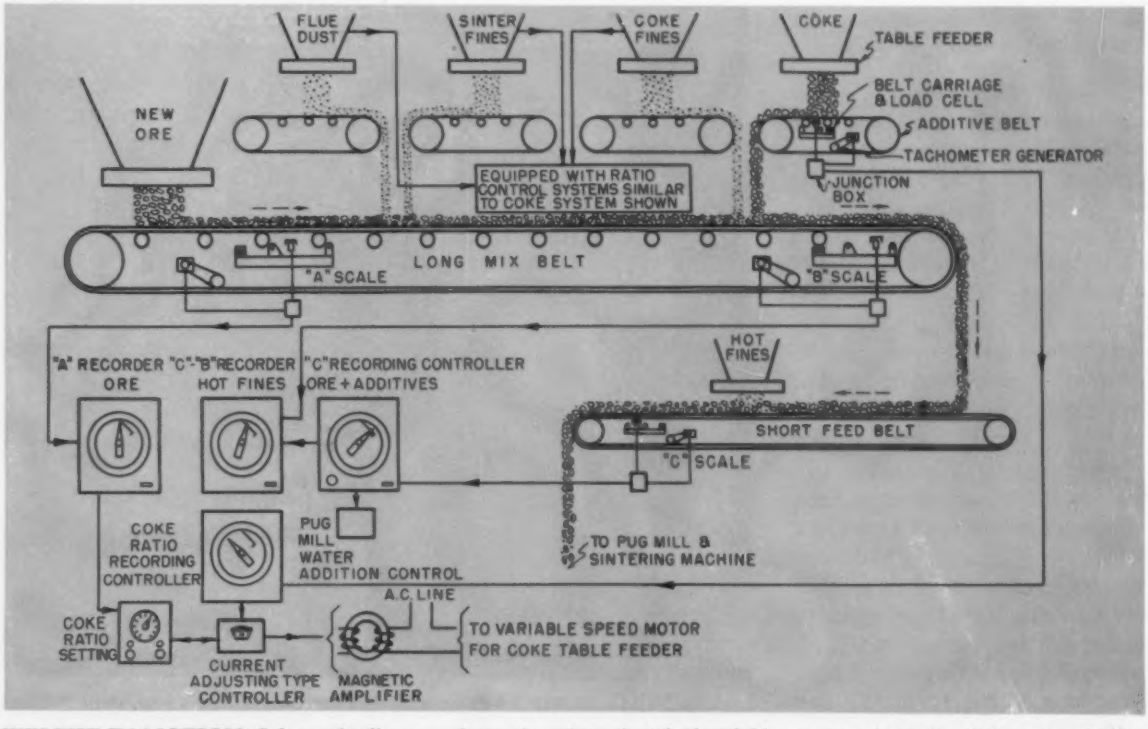
Weighing doesn't hold up production. Material moves right along. The setup weighs material on a short section of the belt. It also figures belt speed. Automatically computing both, it measures out the desired amount.

Three Main Parts—Three major items comprise the setup. One is an electric tachometer. This figures belt speed. The second is an electric strain gage load cell. This measures belt load. Third is a specially modified electronic potentiometer. It indicates and records instantaneous flow in tons per hour. This instrument can also include a counter which shows total tonnage.

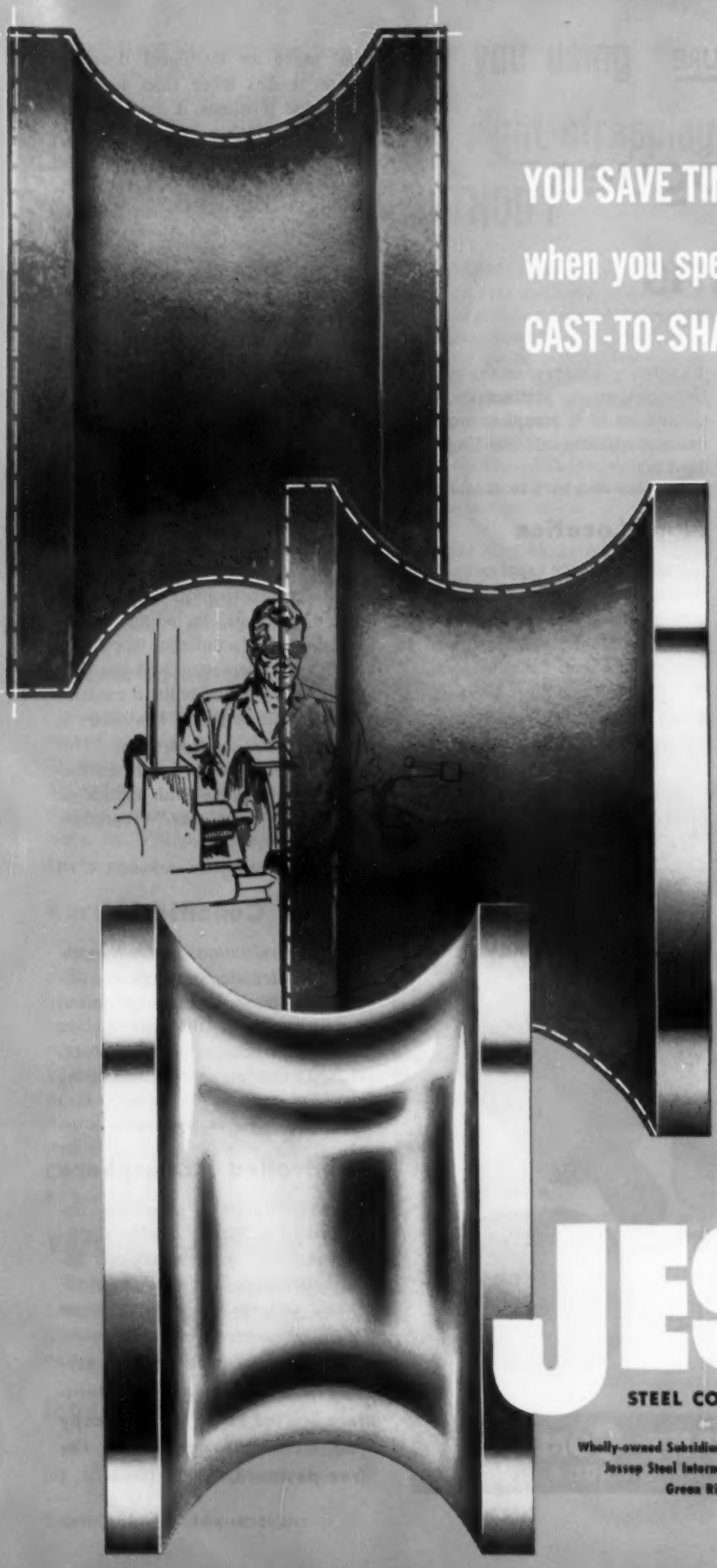
In Jones & Laughlin's system, 12 automated weighing units check moving materials at every important stage of the sintering operation. The diagram below, for simplicity, shows only one complete electrical control system (coke) of four integrated ratio setups (coke, sinter fines, coke fines and flue dust).

All Are Similar—All four ratio setups are of the same general type. A magnetic amplifier controls materials flow from table feeders. This amplifier uses no motorized rheostats or similar moving parts.

As shown in the schematic drawing, one scale records total ore flow. All other material flows are proportioned against this "primary" flow. Another scale records the movement of hot fines; it electrically subtracts a reading on the long mix conveyor from a reading on a recorder-controller of ore and additives.



WEIGHT IN MOTION: Schematic diagram shows complete electrical weighing system for coke. Others are similar.



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FREE TECHNICAL LITERATURE

New Catalogues And Bulletins

Pierce Nut Units

Pierce nut units outlined in a catalog stake Fabristeel nuts into sheet metal for assembly panel production. Units are press actuated. Nuts pierce the sheet stock becoming an integral part of it. (Wales-Strippit, Inc.)

For free copy circle No. 1 on postcard, p. 101

Flame Cutting

Oxygen-flame shape cutting machines are covered in a brochure. Virtually packed with material on "machine tools for oxygen cutting," it's actually a manual on the subject. Drawings, charts, instructions, data, all add up to a complete work on flame machining. (Heath Engineering Co.)

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Plant Location

Industrial water supplies in Pennsylvania are analyzed in an 88-page book. Many site seekers frankly admit available water supply is number one item for consideration. No drum - pounding promotional piece, this book merely supplies facts so management can compare and make an intelligent decision. Water means more than supplies, wells and pipelines, it means populated areas, labor, markets, waterways, ports, waste disposal, and related assets (related disadvantages, too). (Pa. Dept. of Commerce).

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Machining Research

A 6-page folder reports on an extensive metalworking research program known as the Cooperative Machining Project. This is a nonprofit group using multiple bar automatics to find ways to get lowest cost per workpiece. (Cone Automatic Machine Co.)

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Metals Analysis

Neutron activation analysis of many materials, including metals, is discussed in a bulletin. Approaching it from theoretical and practical points of view, the bulletin explains how a radioanalytical laboratory is currently offering its services. "This technique," it states, "offers a sensitivity not possible with earlier or present day techniques." (Tracerlab, Inc.)

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Water Conditioning

Demineralization and evaporation of water are compared in a 40-page handbook. It stacks-up various water treatment methods against each other. Cation and anion exchange materials and demineralizing costs are covered. (Cochrane Corp.)

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Visual Aids

Over 500 pressure-sensitive tapes of many sizes, colors and patterns are listed in a 32-page booklet. Such tapes—and other stick-on products—are handy for making charts, graphs, and other visual presentations. It includes step-by-step directions on making plant and shop layouts. (Chart-Pak, Inc.)

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Microradiography

Contact microradiography for metals research is explained in a 16-page booklet. Text covers: X-ray absorption, contrast, project and contact radiography, equipment, films, etc. (Philips Electronics, Inc.)

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Rare Metals

Rare and reactive metal tubing and pipe are presented in a 44-page handbook. Zirconium, Zircaloy 2 and 3; titanium 40, 55 and 70; precipitation hardening steels A-286, 17-7-PH, 15-7-MO; and Hastelloys A, B, C, F and X are included. A wall chart on corrosion accompanies the book. (Damascus Tube Co.)

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Vacuum Metallizing

Tungsten coils for vacuum metallizing are presented in a booklet. (Sylvania Electric Products, Inc.)

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Industrial Color

A functional color kit representing 13 paint manufacturers shows

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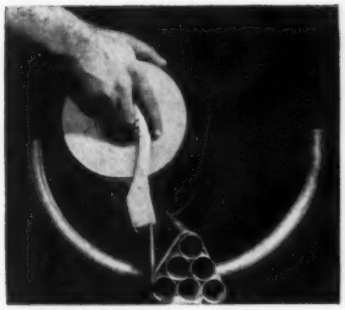

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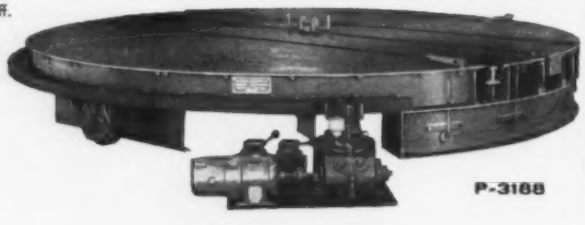

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how color means money. Wise use of color can curtail shop accidents, up worker efficiency, make your plant more attractive to highly skilled or technical personnel. When comfort, safety, and morale improves, personnel generally become more productive, less demanding; when color is used properly, employer and employee both benefit. (Colorizer Associates).

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Pneumatic Conveyors

Practical pneumatic conveyor design is the subject of an 8-page bulletin. It tells how to select, operate and maintain air systems for transporting dry bulk materials. (Sprout, Waldron & Co.)

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Steel Bar Stock

An engineering report presents assets of Stressproof steel bars. These bars are especially valuable to users needing strength, excellent machinability and close accuracy. Yield strength is 100,000 psi in all sizes. Available from local Steel Service Centers, Stressproof approaches B1112 (approximately 83 pct) in machinability. (LaSalle Steel Co.)

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Pump Drives

Pump drives are presented in a pair of bulletins. One deals with right angle, solid shaft, gear drives for centrifugal pumps and industrial use. The other is on right angle turbine pump drives. (Johnson Gear & Mfg. Co., Ltd.)

For free copy circle No. 15 on postcard, p. 101

Hand-run Cranes

Hand operated cranes are outlined in a 4-page folder. Of the underslung single bridge type, models come in 1 to 10-ton capacities, up to 50-ft long spans. (Wright Hoist Div., American Chain & Cable Co.)

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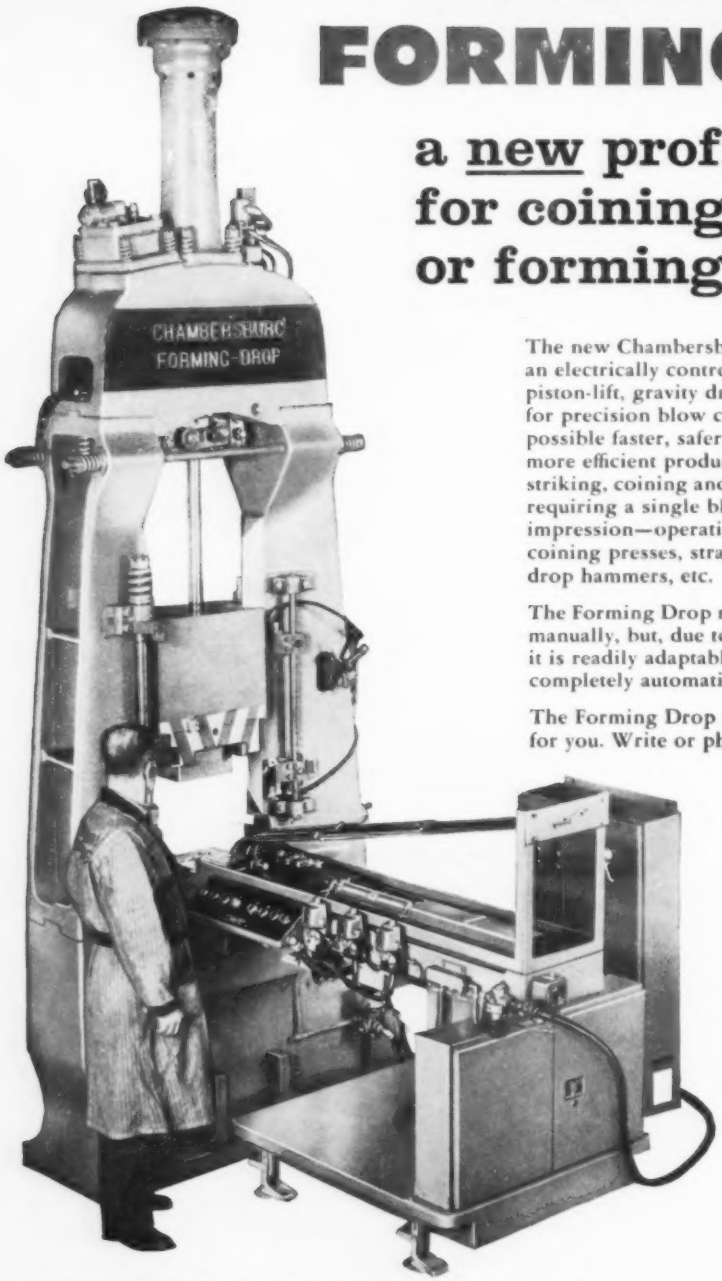

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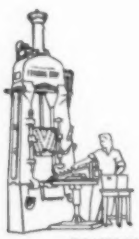
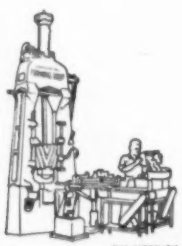

SEMI-AUTOMATIC


FULL AUTOMATIC

CHAMBERSBURG ENGINEERING COMPANY . . . . . CHAMBERSBURG, PA.

CHAMBERSBURG

THE HAMMER BUILDERS

CECO-DROP

STEAM DROP

CECOSTAMP

BOARD DROP

AUTOMATIC FORGING

THE IMPACTER

FLAT DIE SINGLE FRAME

FLAT DIE DOUBLE FRAME

PNEUMATIC SELF-CONTAINED

TRIMMING PRESS

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Boring Mills

Horizontal boring mills are dealt with in a 6-page bulletin. It describes 4 and 5-in. table type boring, drilling and milling machines. Pendant control and other design features are summarized. (Cincinnati Gilbert Machine Tool Co.)

For free copy circle No. 21 on postcard

Strapping Tape

Lightweight and compact, a new strapping tape dispenser is available. The dispenser seals bundles of pipe, wire, conduit, etc. Weighing 16 oz, it's 12½-in. long. It can be operated with one hand, taking 1-inch wide, 60-yd long strapping tape. (Permacel-Lepage's, Inc.)

For free copy circle No. 22 on postcard

Machine Mounts

Results of a long study on vibration control for all types of machinery are now available. Findings appear in a new booklet. It covers all general machinery and includes examples, case histories, cost reduction results, vibration studies and deflection curves. (Felters Co.)

For free copy circle No. 23 on postcard

Bandsaw

A 4-page folder describes a new band saw. This saw performs both low-speed sawing and high-speed friction cutting. (W. Whitney Stueck, Inc.)

For free copy circle No. 24 on postcard

Chemicals & Steel

Completely revised, a 40-page booklet examines uses of stainless steel in the chemical industry. (Allegheny Ludlum Steel Corp.)

For free copy circle No. 25 on postcard

Stamping

How a firm may solve your thorniest stamping problems is told in a 12-page booklet. It describes drawing board to finished product services which are available. A key fact is this: the company has an assured source of steel—Wheeling Steel Corp., its parent organization. (Ackermann Mfg. Co.)

For free copy circle No. 26 on postcard

Welding Connectors

Aluminum power connectors are covered in a 51-page catalog section. More than 30 pages cater to bolted and expansion types; 15 cover welding connectors. Complete details are offered on each type of bolted, expansion, and welding connector. Scaled drawings, photographs and charts deal with run, SPS tubing catalog numbers, dimensions, bolt diameters, etc. (Delta-Star Electric Div., H. K. Porter Co.)

For free copy circle No. 27 on postcard

Storage Files

A 16-page catalog covers a comprehensive line of steel storage files. (Diebold, Inc.)

For free copy circle No. 28 on postcard

Air Conditioner

Multi-zone air conditioning units are covered in a bulletin. Its 8 pages contain data on eight sizes with air capacities ranging from 3400 to 36,000 cfm. (American Air Filter Co.)

For free copy circle No. 29 on postcard

Handling

Corrugated steel boxes, skids and pallets for unit load handling are mentioned in a 16-page catalog. (Union Metal Mfg. Co.)

For free copy circle No. 30 on postcard

Fork Truck Dumper

A box dump attachment for fork trucks is illustrated in a data sheet.

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 10/9/58

Circle numbers for Free Technical Literature or information on New Equipment:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

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FREE LITERATURE

Capacities run from 2000 to 10,000 lb. (Elwell-Parker Electric Co.)

For free copy circle No. 31 on postcard

Honing Machines

Honing machines are shown in a 30-page catalog. Also detailed: honing heads which adapt to drill presses, a mandrel driver, mandrels and abrasive stones. (Superior Hone Corp.)

For free copy circle No. 32 on postcard

Forming Machines

An 8-page catalog pictures machines for expanding, shrinking and roll forming metal. Coilers, weld trimmers, seamers and other equipment are also shown. (For free copy write on company letterhead to Grotnes Machine Works, Inc., 5454 N. Wolcott Ave., Chicago 40, Ill.)

Flow Indicator

Flow rate indicators are detailed in a bulletin. These indicators feature a vibration-proof flow alarm switch for high and/or low flows. They're especially suitable for measuring flow rates of bearing lubricants, coolants, etc. (Fischer & Porter Co.)

For free copy circle No. 33 on postcard

Worm Drive

"Why worm gear?" asks an 8-page booklet, which quickly comes up with some answers. It contains general information on the subject. (Cleveland Worm & Gear Co.)

For free copy circle No. 34 on postcard

Electron Microscope

Engineering information on an electron microscope appears in a 6-page folder. (Philips Electronics, Inc.)

For free copy circle No. 35 on postcard

Plastics

Products for the plastics and allied industries are offered in a booklet. It covers: adhesives, coatings, anti-static agents, cleaners, lubricants, and related products for use with most plastics as well as with metal, glass, etc. (Chemical Development Corp.)

For free copy circle No. 36 on postcard

Steel Couplings

New forged steel couplings come in sizes No. 5½ and 6. Both are said to be stronger and lighter than other couplings. (Metal Products Div., Koppers Co.)

For free copy circle No. 37 on postcard

Malfunction Detector

A bulletin just released explains functions of a Vibraswitch malfunction detector. This device protects large motors, pumps, compressors and other rotating equipment. It responds to mechanical malfunctions instantly. Failing bearings, bent shafts, broken blades, overspeeding, etc., can be detected. (Robertshaw-Fulton Controls Co.)

For free copy circle No. 38 on postcard

Miller Bearings

Replaceable roller bearings for outboard supports of standard milling machines are shown in a 4-page bulletin. It lists bearing sizes and dimensions for popular make milling machines. Bearings can be installed without machine rework. (Tool & Mfg. Co.)

For free copy circle No. 39 on postcard

Conveyors

Roller and wheel conveyors appearing in a 68-page catalog move anything from small boxes of parts to mammoth castings. Of particular interest are spring mounted roller conveyors that cut costs in foundries, steel plants and heavy-work shops. Coil upenders, tilters, etc., also appear. (Mathews Conveyor Co.)

For free copy circle No. 40 on postcard

Dial Indicators

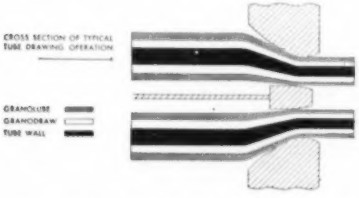
A 12-page catalog deals with dial indicators. (Petz-Emery, Inc.)

For free copy circle No. 41 on postcard

CHEMICAL CONVERSION COATINGS and their functions in facilitating the cold mechanical deformation of metals

By ARTHUR DAHL, Product Development Dept., AMCHEM PRODUCTS, INC.

When used to facilitate the cold mechanical deformation of metals (in drawing, extrusion, stamping, cold heading, necking, and upsetting operations) chemical conversion coatings in conjunction with suitable lubricants perform three important functions. One, they prevent metal-to-metal contact between work and tool. Two, they prevent galling and seizing. Three, they protect stock indefinitely, permitting the storage of in-process work at any stage of production, without danger of corrosion damage.



Characteristic of the tightly bound, highly absorptive, crystalline coating formed by the processes is the ability of the coating to retain lubricity throughout forming operations when treated with a suitable lubricant. This offers the following production advantages:

- **Higher degree of reduction**
- **Greater speed of draw**
- **Longer tool life**
- **Fewer process anneals and pickling**
- **Finer surface finish**
- **Cleaner mills**
- **Easier inspection of finished product**

Also of interest to production men is the exact duplication of coatings from batch to batch. And the processes are much simpler than other methods of coating metals—baths can be set up and running in less time than it takes to determine suitable coatings by other methods.

TYPES OF COATINGS AND THE METALS FOR WHICH THEY ARE DESIGNED

Zinc phosphate coatings for carbon steel. These coatings can be applied by either dip or spray systems.

Dip. ACP Granodraw No. 1 is typical of the dip process. The sequence includes precleaning, water rinse, pickling, water rinse, water rinse, Granodraw No. 1 solution, water rinse, and a hot neutralizing rinse. Surfaces to be treated must be free of oil, grease, rust and scale. The above sequence insures that they will be. And when metal is free of rust and scale, the pickling bath and two succeeding water rinses can be omitted. In either case, a lubricant like ACP Granolube or conventional lubricant must be applied prior to working the metal.

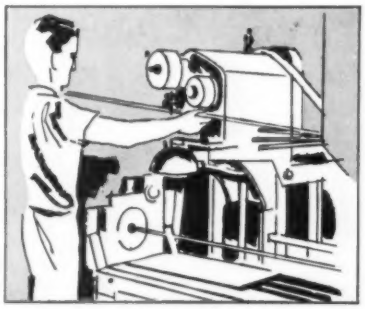
Spray. ACP Granodraw No. 4 is an example of the spray process. It usually requires 5-stage equipment and includes the following steps: precleaning, water rinse, Granodraw No. 4 solution, water rinse, lubricant. After chemical treatment, the work must be dried before forming.

Oxalate Coatings for the stainless steels and many of the high nickel alloys. These coatings are applied only by immersion process, and usually in a 5-stage system which includes an acid pickling or depassivating bath, a water rinse, the ACP Granodraw SS coating bath, a hot borax neutralizing rinse for wire stock, or a lubricating bath for tube stock. Since thorough activation of the metal surface is necessary to promote an adherent coating, the pickling and activating bath is an important stage in processing.

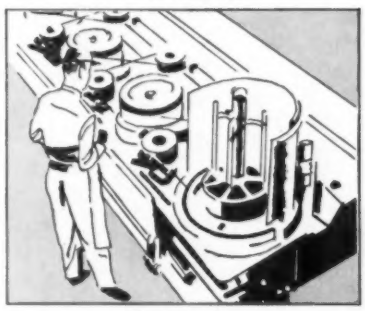
Fluoride-type coatings for zirconium and its alloys. Granodraw ZR is such a coating. It is applied in an immersion process which includes precleaning, water rinse, pickling, water rinse, Granodraw ZR solution, water rinse, drying or lubricating. It has been used primarily in the treatment of stock prior to wire drawing and tube drawing. Surfaces are cleaned of oil and grease by solvent degreasing or alkali cleaning. Pickling is required to provide a surface that is chemically and metallurgically receptive to the coating.

Strong alkali coatings for tantalum and amorphous phosphate coatings for aluminum. These two types of coatings are now in the development stage. Laboratory and field tests are being conducted, results are being evaluated, and modifications in chemical makeup and process sequence are being made to meet requirements. Several field tests, however, have indicated that they will do the same job for tantalum and aluminum processors as the other types of coatings have done for those working carbon steel, stainless steel, high-nickel alloy, and zirconium.

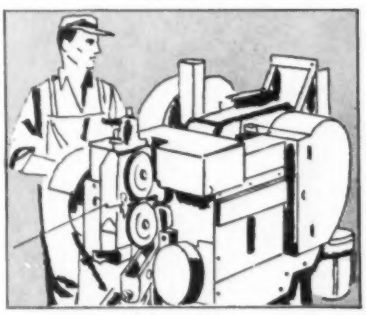
For more information write us at Ambler.



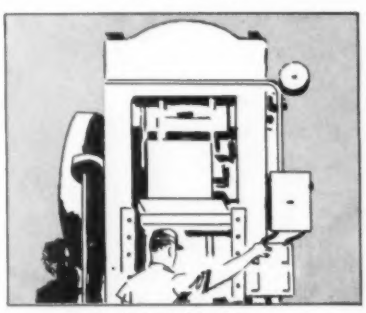
Tube Drawing



Wire Drawing



Cold Heading



Impact Extrusion

Note. Granodraw and Granolube are registered trademarks of Amchem Products, Inc.

Amchem Products, Inc. Ambler 20, Pa.

Formerly AMERICAN CHEMICAL PAINT COMPANY

CHEMICALS ACP PROCESSES

DETROIT, MICH. • ST. JOSEPH, MO.
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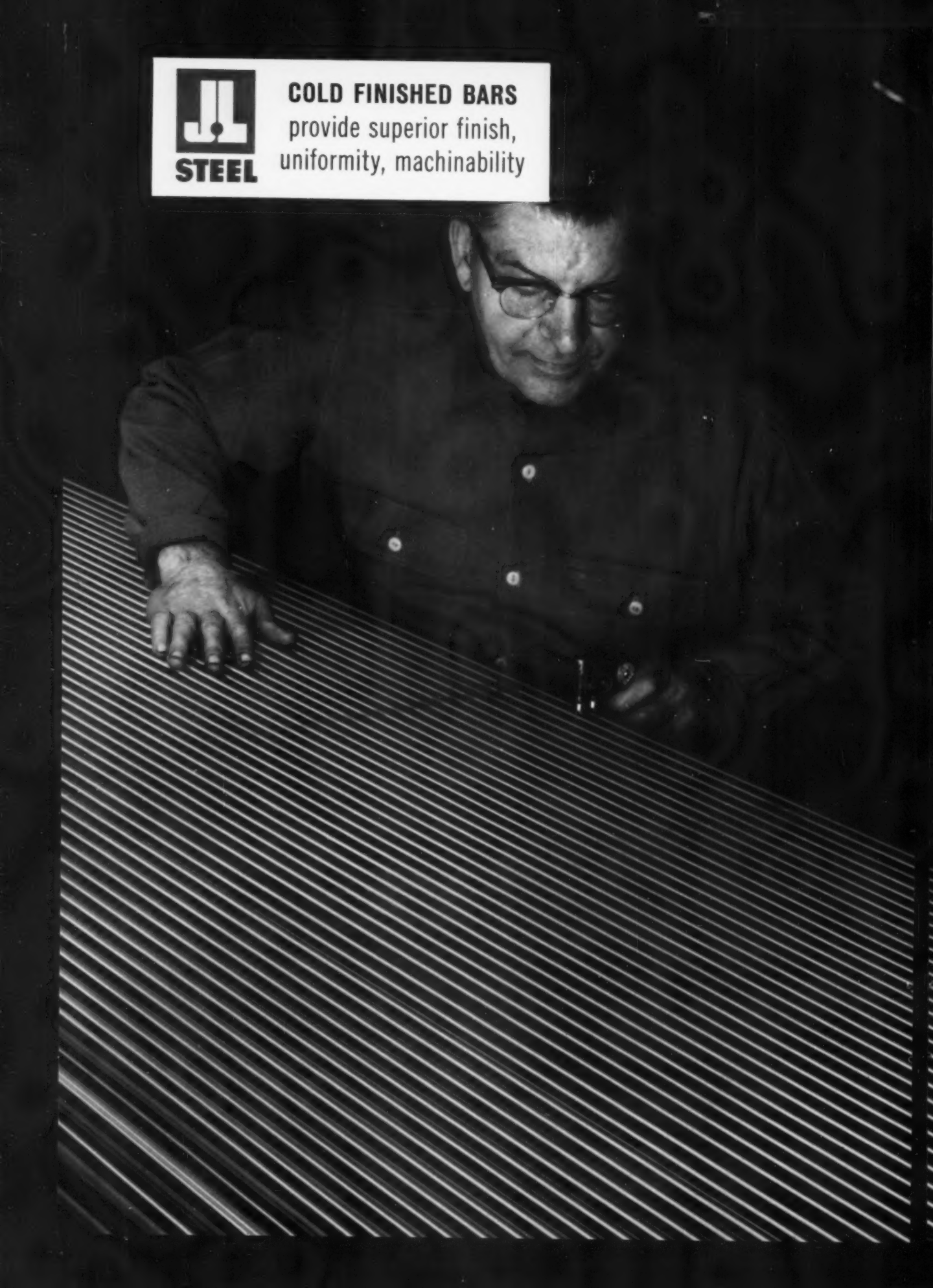
New Chemical Horizons for Industry and Agriculture


JL
STEEL
COLD FINISHED BARS
provide superior finish,
uniformity, machinability

"J&L B-1113 leaded steel provides flawless finish, speeds machining of Singer sewing machine parts 35%"

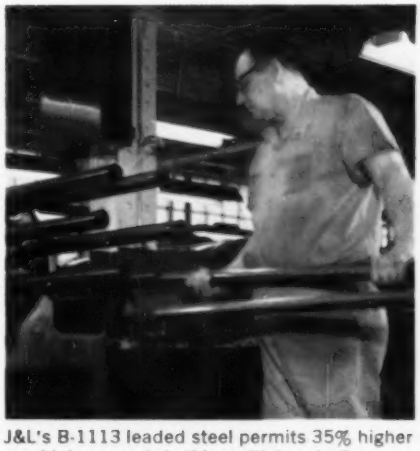
"Flawless finish of 'Slant-O-Matic' hook assembly components machined from J&L B-1113 leaded steels, and carefully polished, prevents thread snags," according to officials of Singer Manufacturing Company.

With the "Slant-O-Matic" hook assembly moving at 3200 revolutions a minute, the slightest burr or tool mark on any part would snag the thread. Singer officials report the machined surfaces with J&L steel are "definitely easier to polish." They are now using leaded steel in over 100 components on the scores of industrial and household machines they manufacture.

"Use of cold finished leaded steel bars also speeds production 35% on our multiple spindle screw machines. And we get 25% longer tool life," Singer officials report.

Similar machining qualities and speed are possible in your operations with J&L controlled quality cold finished steel bars. A J&L steel specialist can recommend exactly the right steel for any job from J&L's complete cold finished line. Chances are he can help you get improved finishes, higher cutting speeds and longer tool life.

Call your local distributor, or write to Jones & Laughlin Steel Corporation, Dept. 543, 3 Gateway Center, Pittsburgh 30, Pennsylvania.



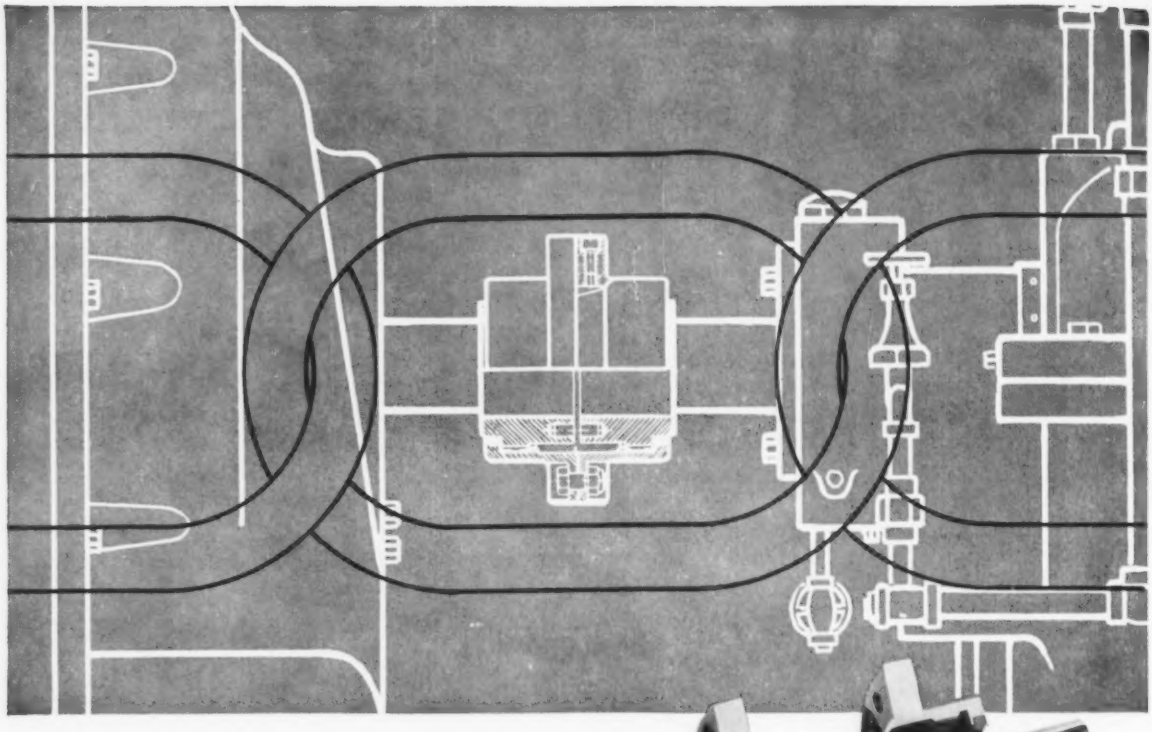
J&L's B-1113 leaded steel permits 35% higher machining speeds in this multiple spindle screw machine operation at Singer Manufacturing Co., Elizabethport, N. J.

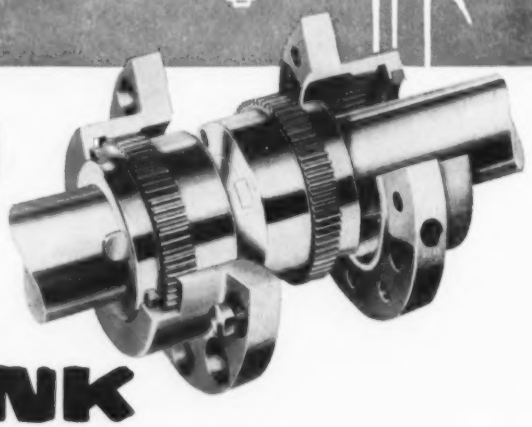
Superior surface finish of these hook assembly components prevents thread snags on Singer's "Slant-O-Matic" machines. Parts are machined from J&L leaded steel bars.

J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA





FOR WELL-DESIGNED EQUIPMENT...

SPECIFY THIS

POWER LINK

When a lot of time and effort have gone into the design of a piece of driven equipment, it makes sense to pick the power link carefully. Take a pump or compressor, for instance. No matter how well it is designed and built, for long service life and operating efficiency, it needs protection against strains due to misalignment.

Waldron gear couplings provide complete protection and positive, trouble-free drive because

They are strong . . . Hubs and cover sleeves for sizes 1¼A through 7A are machined from tough steel forgings. Hubs are keyed to the shafts. The two one-piece cover sleeves function as a single, rigid unit serving as a floating connecting link between the hubs. High strength of forgings makes possible a very compact coupling with low rotating inertia.

They are reliable . . . There are no flexible parts to bend or break and the coupling is dust, moisture, and oil tight. Patented Walflex seal is at the lowest possible diameter where centrifugal force is least. Clearance between teeth in hubs and sleeve is engineered so that an oil wedge always separates them, taking the wear.

They are available . . . Plenty of rough bore couplings, already assembled—on the shelf for *immediate* delivery. Finish bored standard couplings shipped to meet customers' schedules. We are geared up to give you realistic delivery on *any* type of couplings.

Ask for Catalog 57

JOHN **WALDRON** CORP.

A subsidiary of Midland-Ross Corporation

NEW BRUNSWICK, NEW JERSEY

Representatives In Principal Cities
Export Agents—Frazar & Co., New York, N. Y.

MR

New Methods Up Shop Outputs

Experience has no substitute; any shop man tells you this. Yet, shop after shop finds answers to its problems in tools and ideas it has never used before.

Sometimes, the "least understood" method turns out best.

▪ Multiple spindle drilling is sometimes called the least understood machine shop method. However, two of its users find it increases production considerably—when understood and properly applied.

Enthusiastic machinists at General Electric and Remington Rand

Remington Rand's tool finishes 816 holes in 27.8 minutes.

both agree that consideration of all possible ideas is important; "least understood" methods shouldn't be overlooked.

More Computer Parts—Graduating from single to multi-spindle equipment increases plug board plate output from one pair to more than 16 pairs per 8-hour day at Remington Rand Div., Sperry Rand Corp., Ilion, N. Y. The 7 x 10 x 0.187-in. aluminum plates later get pinned together in pairs in a computer. So they're also drilled in pairs; this eliminates matching-up later.

The 24-spindle machine is a product of National Automatic Tool Co., Richmond, Ind. It has an automatic air-operated indexing fixture. Its 12 left hand spindles drill one set of parts at high rpm. At the same time another set is combination reamed and countersunk by the 12 remaining spindles running at low rpm.

Finished holes have two diameters: 0.174 and 0.187 in. Each calls for a tolerance of +0.002, —0.000 in.

Helps Generator Maker — At General Electrical Co.'s large steam turbine-generator department, Schenectady, N. Y., engineers decided to use multi-spindle drilling when production requirements for generator field wedges increased. Using a standard Natco machine, they tooled it to accommodate half a dozen different size parts and two hole spacings. Three different materials are used—aluminum, 4140 steel, and stainless steel.

When production demands jumped, GE ordered this Natco unit.

In a single generator, 52 different combinations of material, length, hole spacing and number of holes might be found. Lot sizes for one machine setup range from 50 to 400 parts. The machine handles all the variations and still achieves floor-to-floor cycles of two minutes for aluminum, eight for stainless.

Brazing

High speed silver brazing of parts at low unit costs is reported for a

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Metal Stamping Facilities
by Lansing
at your Service for...
ELECTRICAL EQUIPMENT
HOUSEHOLD APPLIANCES
TRANSPORTATION EQUIPMENT
INDUSTRIAL EQUIPMENT
FARM IMPLEMENTS
Lansing Stamping Co.
ESTABLISHED 1914
LANSING 4 MICHIGAN

new process. Developed by Fusion Engineering, Cleveland, the process automatically pre-places brazing alloy and flux onto parts on the production line. Automatic heating devices then complete the brazing. Quality of the soldered joint is held absolutely constant.

In one instance, a fittings manufacturer adapted this process to his regular production line. Formerly two operators applied silver solder rings and flux. One operator, costing the company $4000 per year, has been replaced with automatic equipment costing $400. Material savings average 10 pct and reject parts dropped to less than ½ pct.

Power

Reduction of down-time for maintenance is predicted for two double-armature 12,000-hp twin-drive motors in operation at a large capacity eastern metalworking slabbing mill.

Engineers for General Electric Co.'s large motor and generator department designed the main drive motors to help make things easier for maintenance personnel. In a new "Top-Forward" arrangement, the extension shaft for one motor passes beneath a second motor. In addition, bearings on both motors are easily accessible.

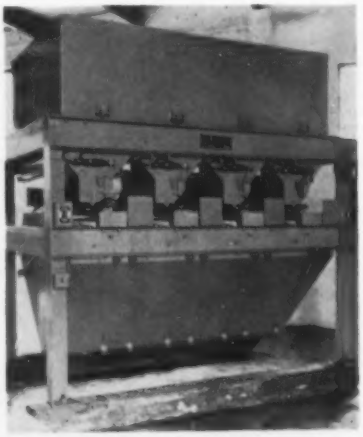
Ore Recovery

Dry separation may boost yield of lower grades

High tension separation of iron ore gives excellent recovery from secondary deposits. So good is it that some concerns get better ore from beneficiating lower grades than from higher grade direct shipping ores.

These are facts learned by a trio of companies studying a dry separation process. Unlike various gravity concentration methods which employ water, the dry process works even in rough climate, especially freezing temperatures which might otherwise curtail wet processing.

How It Works—Minerals in the separator pass through a very high voltage corona discharge and over fast turning rolls connected to ground. Quartz, an abundant mineral in most iron ore deposits, is a



Dry operation lets this separator work in very cold areas.

WILLIAMS-WHITE HYDRAULIC GAP FRAME PRESSES

- Sensitive and positive control of bending ram
- Self-contained hydraulic pumping unit and motor
- Adjustable stroke and hydraulic pressure
- Integral oil reservoir

The above are standard features built into every WILLIAMS-WHITE Hydraulic Gap Frame Press. Regularly built in capacities from 15 tons, with cast or welded steel plate frames, their simple design, sturdy construction, accessible work area, low initial cost and long, trouble-free life are factors to be considered when purchasing a hydraulic press for bending and straightening operations. Why not discuss your requirements with us before you buy?

The press illustrated has 100 tons capacity, 120" x20" removable table, 20" daylight and 16" stroke. It is located in a plant of North American Aviation, Inc.

BUILDERS OF MACHINERY SINCE 1854

WILLIAMS-WHITE & Co.
302 EIGHTH ST. • MOLINE ILLINOIS
PRESSES • BULLDOZERS • BENDERS • PUNCHES • SHEARS

REPRESENTATIVES
CALIFORNIA, Los Angeles: George A. Davies Machinery Co.
MISSOURI, St. Louis or Kansas City: Robt. R. Stephens Machinery Co.
NEW YORK, Buffalo: H. D. Thweatt Co.
OHIO, Cincinnati: Columbus or Dayton: Seifreat-Elstad Machinery Co.
OREGON, Portland: Allied Northwest Machine Tool Corp.
PENNSYLVANIA, Pittsburgh: Frank Ryman's Sons
Wynnewood (Phila.): Edw. A. Lynch Machinery Co.
WASHINGTON, Seattle: Perine Machinery and Supply Co.
WISCONSIN, Milwaukee: Pagel Machinery Co.

poor conductor of electricity. It stays pinned to the rolls.

However, the iron passes the electrical charge through to ground. It's thrown off and separated from the quartz and other minerals.

Trio Studies It—Developer of the dry process is Carpco Research & Engineering, Inc., Jacksonville, Fla. This firm has a working agreement with Joy Mfg. Co., to manufacture and sell Carpco equipment. This is Joy's first venture into this field.

Third company researching the process is Jones & Laughlin Steel Corp., which is getting a pilot plant from Joy. At its ore research laboratory, Negaunee, Mich., J & L is conducting continuing tests to determine the separator's ultimate value to U. S. and Canadian iron ore processors.

Galvanizing

Huge galvanizing kettle accommodates big items

A huge galvanizing kettle just built by Lukenweld Div., Lukens Steel Co., Coatsville, Pa., measures 40-ft 2-in. long, 51-in. wide, 6-ft 10-in. deep. The new kettle exceeds by more than three feet the longest galvanizing kettle now in operation, says its user, Valcon Galvanizing, Inc., Natrona, Pa.

With this new facility, the firm feels that it can literally process anything that can be galvanized.

Needs Special Facilities — It's builder and user had to design special supporting facilities for the new kettle to accommodate its record-breaking size. In addition to new handling equipment for truck and railroad shipment, and for boats on the Allegheny River, Valcon has installed extra-large pickle tanks and —most important—extra-high head room above the kettle.

By providing 40 ft of head room, the galvanizer now brings exceptionally large steel members straight up out of the kettle. This enables them to drain "the long way," giving a smooth zinc finish.

Scheduled for processing as soon as installation is complete are large steel trusses, pipe, and plates, as well as oil derricks, tanks, grating, chains, bars, expanded metal, structurals, and other steel items.

Forming

Researchers seeking new ways to shape beryllium parts

Spurred on by growing use of beryllium oxide shapes, researchers seek new ways to form the material. They are currently exploring cold compacting, slip casting, extrusion and other techniques which might lower finished-piece cost.

Such research is paying off. Recently, Beryllium Corp., Reading, Pa., began turning out beryllium oxide shapes by new hot pressing and machining methods. Cold compacting and sintering are presently used too, in making beryllium oxide crucibles.

(Continued on page 111)

ERIE **Bolts • Studs • Cap Screws • Nuts**
In Alloys • Stainless • Carbon • Bronze

Only the hands of the specialist can produce fasteners which will meet your design and engineering specifications with precise accuracy. Erie has been doing just that for more than 40 years . . . producing to customer specifications bolts, studs, cap screws and nuts for use in extreme temperature, corrosion and tensile applications for a wide diversity of industries. Submit your specifications to us with confidence.

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RIC
REPUBLIC INDUSTRIAL CORPORATION

ERIE BOLT & NUT CO.
Erie, Pennsylvania
Representatives in Principal Cities

Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of THE IRON AGE, published weekly at Philadelphia, Pa., for October 1, 1958.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, George T. Hook, Chestnut & 56th Sts., Philadelphia 39, Pa.

Editor, George F. Sullivan, Chestnut & 56th Sts., Philadelphia 39, Pa.

Managing Editor, Eugene C. Beaudet, Chestnut & 56th Sts., Philadelphia 39, Pa.

Business manager, None.

2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.)

Chilton Company, Chestnut and 56th Streets, Philadelphia 39, Pa.

Holders of more than 1 per cent of the capital stock outstanding of Chilton Company: Mary M. Acton, 260 Sycamore Avenue, Merion Station, Pa.; George C. Buzby, 2 East Sunset Avenue, Chestnut Hill, Pa.; Mrs. Beulah Fahrendorf, Chateau LaFayette, Scarsdale, New York; Dorothy S. Johnson, Route 1, Putnam Valley, New York; Kimberton Hills Farms, Inc., 1608 Walnut Street, Philadelphia, Pa.; Mabel P. Myrin, 1608 Walnut, Philadelphia, Pa.; Mary M. Acton and John Blair Moffett, Trustees U/W of Clarence A. Musselman, Deceased, 1608 Walnut Street, Philadelphia, Pa., Beneficiaries: Mary M. Acton and David Acton; J. Howard Pew, 1608 Walnut Street, Philadelphia, Pa.; J. N. Pew, Jr., 1608 Walnut Street, Philadelphia, Pa.; Mary Ethel Pew, 1608 Walnut Street, Philadelphia, Pa.; Alberta C. Sly, 149-40 35th Avenue, Flushing, New York; Alberta C. Sly, Executrix U/W of Frederick S. Sly, Deceased, 149-40 35th Avenue, Flushing, N. Y., Beneficiaries: Albert C. Sly, Alberta C. Sly, and John E. Sly; Soleil Farms, Inc., 1608 Walnut Street, Philadelphia, Pa.; Charlotte M. Terhune, 160 E. 48th Street, New York, New York.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.) 28,422.

GEORGE T. HOOK, Publisher.
Sworn to and subscribed before me this 23rd day of September, 1958.

PHILIP J. SHIRE, JR.

(My commission expires January 7, 1959.)
[Seal]

You Arbitrate It!

DOUBLING IN STEEL

From the files of
The American Arbitration Association

▪ An inspector on a sand blasting machine in a steel mill recently decided to transfer to another job. He had enough seniority for the move and nobody objected. Now this left his job open. The union expected the company would post it and fill it by moving a senior applicant up the ladder.

Management had other ideas. Things were slow. So it decided to leave the job unfilled; when necessary, a higher-paid employee could move over to the machine and do the work. There wouldn't be any wage adjustment problem since the contract let men fill temporary assignments at lower-graded work provided they were paid their regular rates.

Labor Says "No!"—The union objected. "Some of the men have been waiting for a chance to get promoted," the chief shop steward explained. "Now that an inspector's job is vacant you have no right to refuse to fill it in the manner prescribed by the contract."

"Just because a man left a job doesn't create a vacancy," answered the personnel manager. "A vacancy exists only when we decide we need a regular man at it. If we replaced the inspector there wouldn't be enough work for some of the higher-rated men and we'd have to lay one of them off."

Eventually the case went to arbitration under the rules of the American Arbitration Assn. How would you rule?

The Arbitrator Ruled:

The arbitrator made three points: (1) When a man leaves a job, there's a presumption a vacancy exists. A job might disappear at the same moment the person holding it leaves, but this would be a rare coincidence. As long as management expects someone to do the inspector's work, even if only part-time, the vacancy exists; (2) the provision

(Continued on following page)

TECHNICAL BRIEFS

(Continued from page 109)

Atomic Energy Uses—Beryllium oxide has a low neutron capture cross section, high electrical resistivity and dielectric strength. For these and other reasons it's finding increased uses in nuclear, aircraft, missile and electronic components.

In making the shapes, the firm packs high-purity beryllium oxide powder in graphite molds. Hot pressing then takes place in an induction pressing furnace. Densities exceeding 95 pct theoretical can be attained in the hot pressing operation.

Machine Tools Move In—After cooling, beryllium oxide blocks move to machine tools running in closed air systems. These, using diamond-tipped cutters, work blocks to desired shapes. Pre-set or remote controlled, the machine tools produce extremely smooth, uniformly dense workpieces.

At present, the firm machines blocks up to 12-in. diam, 6-in. high. Tolerances are extremely close.

The Arbitrator Ruled:

(Continued from preceding page)

for employees to bid into a vacant job in accordance with seniority is a valuable contractual right. Though maybe inconvenient for the company, it's still part of the bargain. It wouldn't be fair to deprive employees of promotion opportunities, particularly as the union may have given up other demands for the sake of this benefit; (3) the fact that men in some of the higher classifications may have to be laid off if they are not permitted to do the inspector's work is immaterial. The contract provides for layoff by seniority when work becomes slow.

Caution: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

a bright new wire with a brighter tighter finish

Brytite®

A PATENTED GALVANIZING PROCESS

SO BRIGHT—Use *Brytite* wherever a shinier, brighter zinc coating is desired for long lasting, more sparkling product appearance. Eliminate polishing and special finishing operations

SO TIGHT—Brytite has remarkable forming qualities. The zinc coating is so tight it will withstand severe deformation of the base metal without flaking, powdering or peeling.

SO CLEAN AND SMOOTH—Satin smooth in looks and feel, BRYTITE immediately raises the quality appeal of your product. You get smoother production, too—the result of precise uniformity and quality controls.

ROUND AND SPECIAL SHAPES—*Brytite* is available in many sizes in round wire, and may on inquiry, be furnished in standard and special shapes—flat, half-round, oval, half-oval, square, rectangular, and many others.

TEMPERS AND ANALYSES—Specify BRYTITE in various tempers and analyses in the low carbon and medium low carbon steels.

FINISHES—Satin Finish, Unwiped (where a heavy weight of zinc coating is required) and Redrawn, in certain sizes.

no polishing...no buffing...no finishing...

withstands difficult forming operations

CONTINENTAL STEEL

CORPORATION · KOKOMO, INDIANA

PRODUCERS OF Manufacturer's Wire in many sizes, tempers and finishes, including Galvanized, KOKOTE, BRYTITE, Flame-Sealed, Coppered, Tinned, Annealed, Liquor Finished, Bright, and special shaped wire. Also Welded Wire Reinforcing Fabric, Nails, Continental Chain Link Fence and other products.

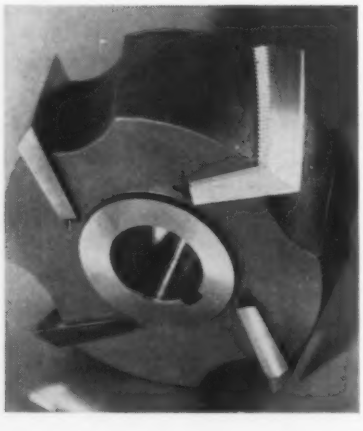
New Production Ideas

Equipment, Methods and Services

Electric Trucks Combine Durability, Power

Rugged durability, high power and compact design; these are key features of a new line of electric industrial lift trucks. Capacities run between 12,000 and 20,000 lbs. In addition, the trucks are highly maneuverable. Only 108½-in. from the rear of their counterweight to the face of their fork carriage, they have a 50½-in. width across the drive wheels. Turning radius is just 92⅝ in. This means the high-capacity trucks can easily maneuver in and out of standard box cars. Despite compact dimensions, the medium-capacity-range handlers accommodate 60 and 72-v batteries. These give necessary power to meet severe handling jobs. The trucks' channels have 11-in. wide outer sections, 9-in. inner sections. These are the same channels used on the maker's 20,000-lb capacity gas-powered trucks. (Yale & Towne Mfg. Co.)

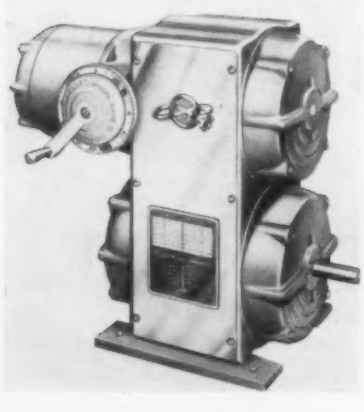
For more data circle No. 42 on postcard, p. 101



Milling Cutters Work Magnesium and Aluminum

Especially designed for milling aluminum and magnesium is a new line of milling cutters. The micro-finish cutters, says their manufacturer, produce super-finishes on these metals. The cutters are specifically produced to mill both aluminum and magnesium to tenths. They hold a 30 micro-inch finish or better. This means that they could eliminate some grinding and/or finishing operations. Known by the trade name Microcut, these cutters come in a variety of types. All have highly finished cutting edges and polished flutes. Such milling cutters are presently available in inserted, wedge-type, and solid type cutters. They come in high-speed steel, cast alloys and carbide. This new milling cutter design has been thoroughly tested by the manufacturer, resulting in its recommendation for working precision aircraft and missile parts. (O. K. Tool Co.)

For more data circle No. 43 on postcard, p. 101



"Building Block" Drive Adjusts in the Field

This mechanical adjustable speed drive offers infinitely variable speed over ranges up to 8-to-1. The drive operates from an alternating-power source. It comes in ratings from 1 to 20 hp. Output speeds of 1 to 10,000 rpm are obtainable. The drive is designed for use in various machine tool, metalworking and materials handling applications. Basic components of the unit can be rearranged in the field to meet ever changing industrial requirements and to minimize stock space needs. This versatile "building block" principle permits vertical or horizontal mounting of units on floor, wall, or ceiling; location of the output shaft and motor in any of four positions; and location of the speed changing mechanism on top, right or left of the motor housing. Drives with single or double reduction gears can switch ratios in the field. (Louis Allis Co.)

For more data circle No. 44 on postcard, p. 101

OSTUCO WELDED TUBING

solves your fabrication puzzles

Product design dilemmas . . . or production problems? Solutions to these perplexing puzzles fall right into place *naturally—with Ostuco Welded Tubing.*

First, Ostuco Welded Tubing is one of the most versatile of all materials. It can be subjected to virtually every fabricating operation known.

Second, we can perform any one or more of these fabricating operations. That means you add us to your production line without investment in equipment, inventory or plant.

Third, when you deal with Ohio Seamless you're dealing with tubing *experts* . . . men who can recommend the *exact* Ostuco Welded Tubing to suit your product and processes. Just contact our nearest sales office, or the plant at *Shelby, Ohio—Birthplace of the Seamless Steel Tube Industry in America.*

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OHIO SEAMLESS TUBE DIVISION

of Copperweld Steel Company • SHELBY, OHIO

Seamless and Electric Resistance Welded Steel Tubing • Fabricating and Forging

SALES OFFICES: Birmingham, Charlotte, Chicago (Oak Park), Cleveland, Dayton, Denver, Detroit (Huntington Woods), Houston, Los Angeles (Lynwood), Moline, New York, North Kansas City, Philadelphia (Wynnewood), Pittsburgh, Richmond, Rochester, St. Louis, St. Paul, St. Petersburg, Salt Lake City, Seattle, Tulsa, Wichita. CANADA: Railway & Power Engr. Corp., Ltd. EXPORT: Copperweld Steel International Company, 225 Broadway, New York 7, New York.

Turning Unit Machines Hemispheres to Tenths

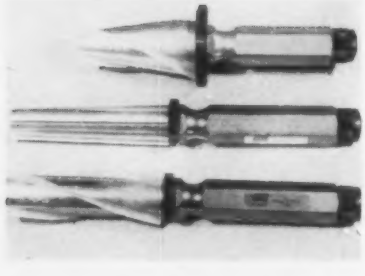
This custom turning machine performs rough and finish machining on the inside and outside diameters of aluminum hemispheres. Either wrought or forged, these hemispheres range from 6 to 16-in. diam. A special work spindle permits the machine to hog out material at a 15 cu in per minute rate, at a depth of cut of ⅛ in. Tolerances are less than 0.0001 in. on the hemisphere radii and about 0.0001 in. total on wall thickness. It gives a surface finish of 10 rms or better. In operation, the slide carrying the work spindle advances to an end stop where it locks into position. Repeatability of this slide motion is within 0.0001 in. A dial gage gives the operator a visual check on this. The cutter spindle plunge feeds to depth against another end stop. This has similar repeatability and similar gage checking. The tooling generates a complete hemisphere in a single operation. (Ex-Cell-O Corp.)

For more data circle No. 45 on postcard, p. 101

Lift Truck's Heavy Frame Means Long Life

Long life and low maintenance result from a new lift truck's heavy-duty frame. Of 2000-lb capacity, the truck gets power from a four-cylinder, 133-cu in. heavy-duty industrial type engine. This delivers 35 brake hp at 2400 rpm. It comes in gasoline or LP fuel models. Two transmissions are available: the standard two-speed constant mesh transmission or, as optional equipment, a torque converter drive. The rugged frame assures complete alignment of parts for long life and low maintenance costs, providing a low-level weight mass for good truck stability. Standard equipment on the unit is high lifting mast. This gives a maximum stacking height of 131 in., over-all lowered height of 83 in., and 16¼ in. of free lift. The mast also provides good operator visibility. The truck maneuvers well in narrow aisles. Over-all width is 32 in.; outside turning radius is 62 in. (Allis-Chalmers Mfg. Co.)

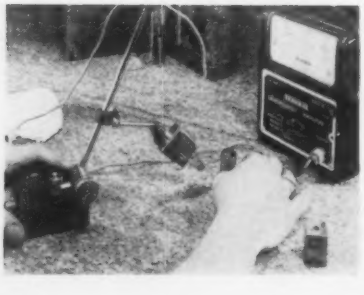
For more data circle No. 46 on postcard, p. 101



Tools Clean Tapered or Straight Holes

Of non-scarring polyethylene, new socket hole cleaners fit tapered or straight holes. Because keeping machine tool spindles clean insures greater work accuracy with less likelihood of scrap due to presence of dirt or foreign materials, these convenient, lightweight, yet rugged cleaners are proving useful in toolrooms and on production lines. The tough, yet gentle, wear-resistant blades clean without harming surfaces. (Scully-Jones & Co.)

For more data circle No. 47 on postcard, p. 101



Portable Electronic Gage Uses Battery Power

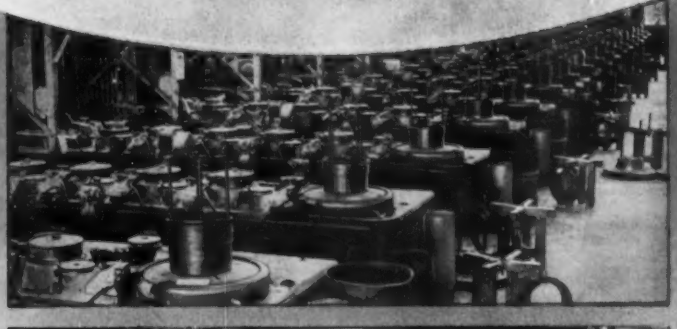
Portable and electronic, this new test indicator provides measuring in the ranges of ±0.001 in. with 0.00005-in. graduations, and ±0.0002 in. with 0.00001-in. graduations. The entire instrument consists of an electrical probing gage head and a lightweight, completely portable, battery-powered transistor amplifier, plus handy carrying case. The gage head operates with a gaging pressure of less than 2.5 grams. Special fixtures or heavy-duty posts and columns are unnecessary. Ordinary test set or height gage fixtures can be used with confidence that

CONTROLLED SPEED
DOUBLE COOLING

NO SLIP
NO STORAGE
NO TWIST

-Better Wire!

VAUGHN® MOTOBLOX®



Every advantage of Vaughn's top technology in wire drawing, combined with the experience of a century in building ever-finer machines for the job, serve you in reducing costs and increasing wire production. Specify MOTOBLOX—we'll gladly consult on types and capacities, at your convenience.

"Quick on the Draw!"

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CUYAHOGA FALLS, OHIO, U.S.A.

COMPLETE COLD DRAWING EQUIPMENT . . . Continuous or Single Hole . . . for the Largest Bars and Tubes . . . for the Smallest Wire . . . Ferrous, Non-Ferrous Materials or their Alloys.

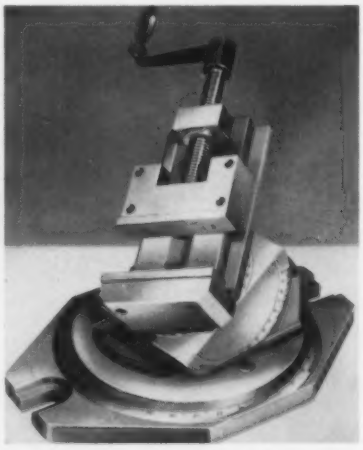
Ⓥ®

there will be no distortion or deflection to affect the gage reading. The probe can apply quickly to precision measurement on a surface plate or at the machine. It is also valuable for precision machine tool set-up. (Federal Products Corp.)

For more data circle No. 48 on postcard, p. 101

Compact Vises

Combining extreme rigidity, high precision and low over-all height is this new vise. Just 5¼-in. high, it has a 4-in. jaw capacity. The three-way fixture is suitable for use with compound heavy medium, or light-duty milling, drilling, boring, grinding, etc. Its new wedge-type movement locks with a rigidity up to 3000-lb torque loading. The vise has a study base 12-in. long, 8⅝-in. wide. Its rigid cradle is "dovetailed" so as to prevent chip clogging in machining operations. For ease and simplicity of set-up all angular adjustments and locking are accomplished quickly with a hex wrench. All graduations, accurate to ± 15 minutes, are clearly marked on



stainless steel rings for permanent, easy reading. Three separate angular adjustments are provided by the vise: 360° rotation of the base, 90° vertical range cradle adjustment, and 360° rotation of the jaw assembly. (Wesson Co.)

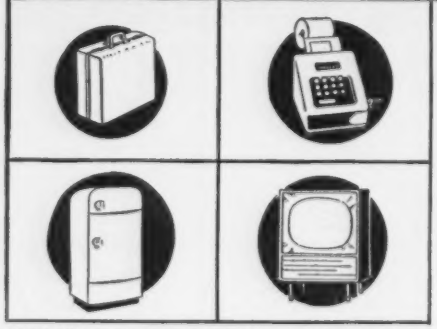
For more data circle No. 49 on postcard, p. 101

Press Type Welder

Ease of operation and flexibility are important features of a new spot welder. For light assembly work, this bench welder is hand operated. It comes in 110- or 230-v models, both 60-cycle, single phase. Just 9 x 15 x 14½ in., not including the operating lever, the compact press-type unit weighs only 65 lb. It mounts on rubber feet, installs easily; or it can be moved easily. It runs from an ordinary house-type lighting circuit. The precision welder applies pressure in a straight line, giving a good weld and preventing skidding of aligned parts. Cam-lever action produces the required high pressure with little operator effort. The unit makes good spot welds on mild or stainless steel through 26 gage; it can cross-wire weld through two pieces of 3/12-in.

NOW . . . A NEW FINISH

colorful, practical vinyl plastic for lamination to metal



- *Can be permanently laminated to metal . . . flat sheets or continuous coil.*
- *Can be crimped, shaped, bent or drilled without damage to textured finish.*
- *Won't chip, peel or fade.*
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- *Unlimited color and design selections.*

A new and more functional finish for greater sales appeal. That's Masland Duran Clad, bringing the texture, warmth and color versatility of practical vinyl to countless products. Find out how your product can have this modern money-saving finish. Write for free folder.

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WHO FORGES THE TOUGH ONES? & machines them, too

You're looking at a universal spindle and coupling for a 38″ slabbing mill. It's nearly 20 feet long and weighs 20,000 pounds. That's a lot of forging—*and we made it!*

The trade knows us as *specialists* in forgings of this large size. We have the experience, specialized talent, and the kind of equipment needed to make couplings, crankshafts, or any other large-size forging, from the basic electric steel to the finished machined part . . . all done in our completely integrated plant.

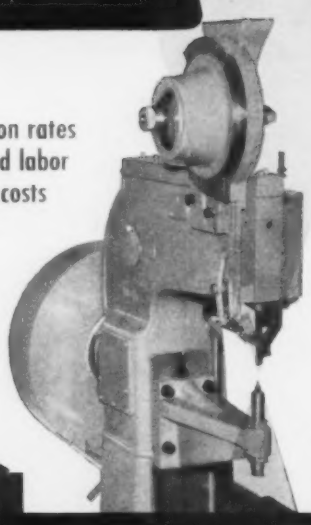
This is our specialty—large commercial forgings. Yes, for over 43 years the trade's answer to "who forges and machines the tough ones . . . best" has been

NATIONAL FORGE
AND ORDNANCE COMPANY
IRVINE (WARREN COUNTY), PENNSYLVANIA

To see more of "the tough ones," and the machinery they're made on, write for Bulletin NFO-1.

Odd shapes are no problem for the new Townsend Model 75 Tubular Rivet Setting Machine

High production rates using unskilled labor cut fastening costs



Skillfully designed tooling gives complete versatility to the new Townsend Model 75 Tubular Rivet Setting Machine. A variety of specialized tooling is available to equip the Townsend machines for any size and shape of work.

Townsend tubular rivets are available in steel, aluminum, copper, brass, nickel-silver and special materials for use in joining anything from cloth to steel sheets. Thus, Townsend makes available the economies of tubular rivet fastening for a wide range of products in a number of different materials. Townsend's experienced fastening engineers provide application design service.

If you wish to enjoy the economies of fastening with tubular rivets, write for complete information on the versatile Model 75 Setting Machine and the complete line of Townsend tubular rivets. Townsend Company, P. O. Box 237-B, New Brighton, Pa.

The Fastening Authority

Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Rivet Division • Santa Ana, California

In Canada: *Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario*

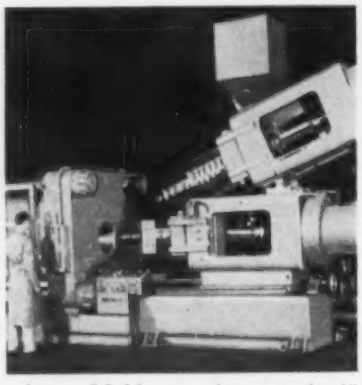
clean steel wire. A heavy-duty, pass-through contactor turns welding current on and off automatically.

Three-point heat control gives the welder a wide range of flexibility. (Peer, Inc.)

For more data circle No. 50 on postcard, p. 101

Injection Molder

This 300-oz capacity preplasticizing injection molding machine is for large plastic parts production. The 1500-ton unit has an injection rate of 6640 cu in. of material per



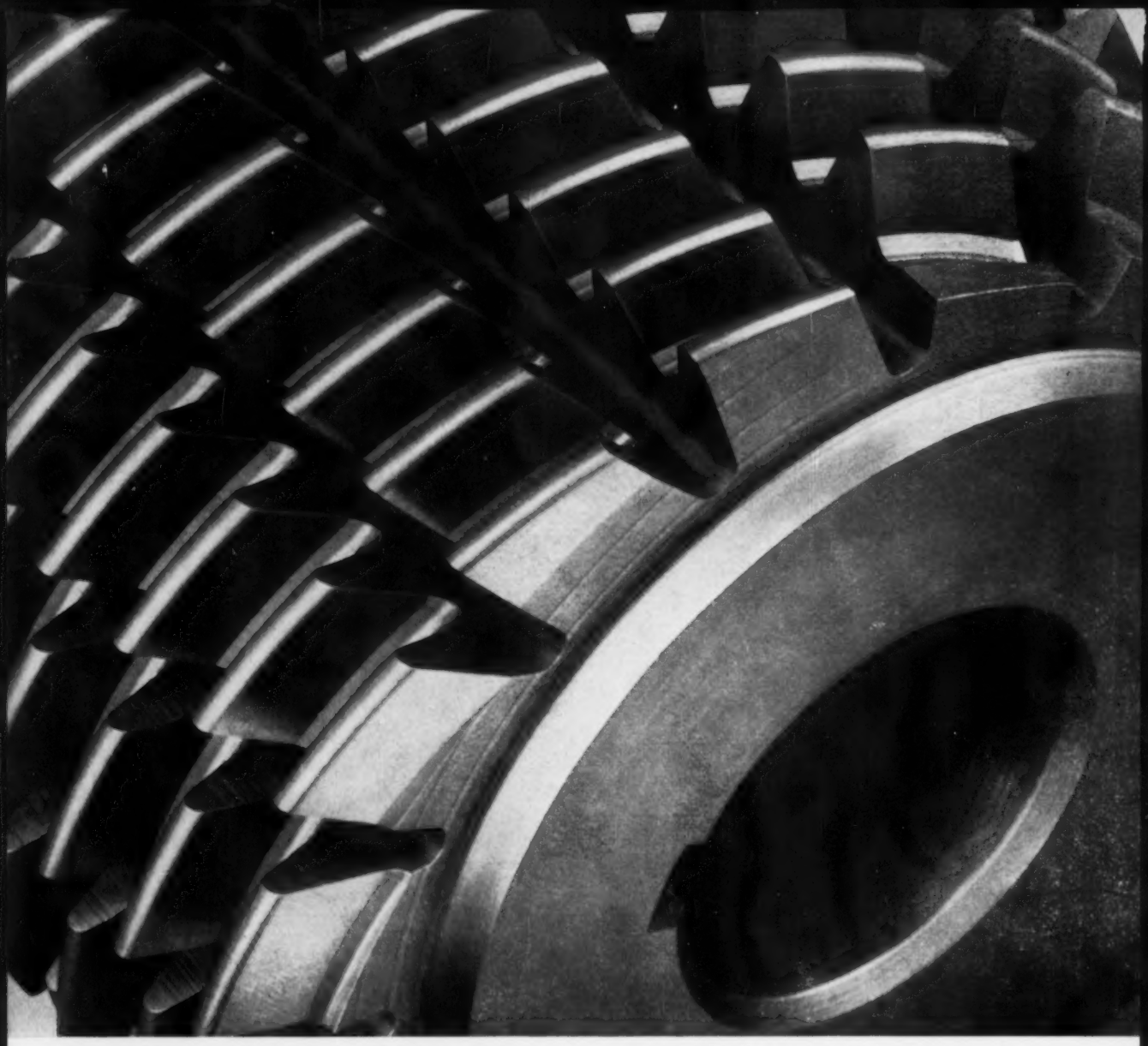
minute. Mold mounting area is 48 x 72 in. A full hydraulic mold clamp has a 60-in. stroke. (Hydraulic Press Mfg. Co.)

For more data circle No. 51 on postcard, p. 101

Miniature Furnace

A miniature furnace demonstrates a new principle of heating metals at practically instant heats—up to 2300°F. (A. F. Holden Co.)

For more data circle No. 52 on postcard, p. 101



Finish obtained in machining REX M-2-S eliminates the need for finish grinding this 4" x 4" unground double thread cutting hob.

Hobs seldom need finish grinding when made of low cost REX M-2-S

This is the actual finish obtained – without costly finish grinding – with REX M-2-S,® Crucible's *sulfur-bearing*, tungsten-molybdenum type high speed steel. The chemistry of this resulfurized steel readily provides the machinability needed for the final, critical "backing-off" operation in making hobs. It doesn't tend to tear or produce rough finishes – as nonsulfur-bearing steels of this type so often do.

REX M-2-S costs about 30% less than T-1 type, too, because it's lower priced per pound, and provides 5.4% more linear feet per pound.

Crucible REX M-2-S is also equal in red hardness to the T-1 type, and even more resistant to abrasion. It's also tougher than any other tungsten type high speed steels, and hardenable over a wider range than any other molybdenum high speed steels.

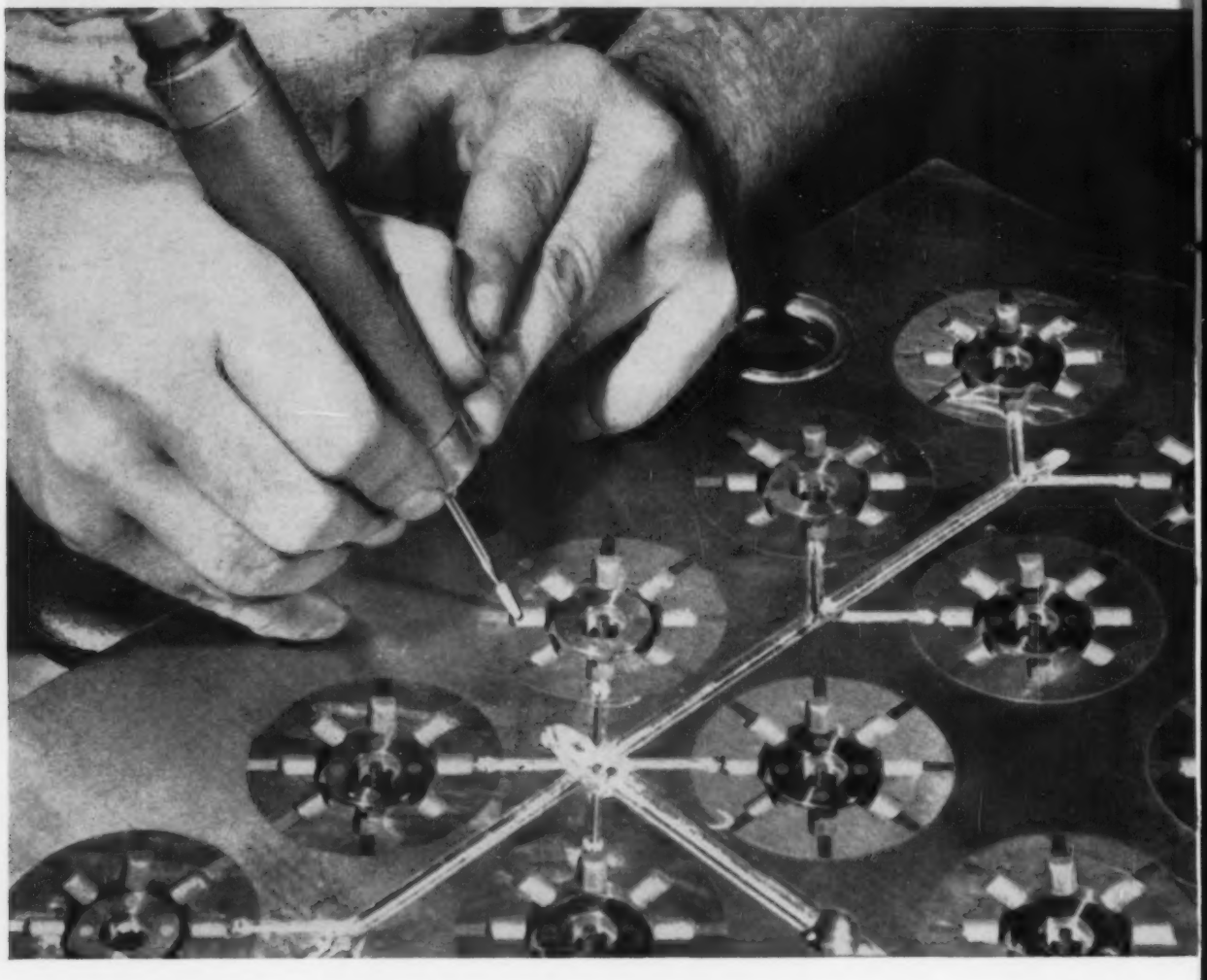
Qualities like these make REX-M-2-S extremely suitable (and economical) for broaches, chasers, lathe tools, reamers, taps and hobs as well as other tools normally requiring high speed steel.

For further information, just ask for details on REX M-2-S – or all the Crucible high speed steels today. Write: *Crucible Steel Company of America, Dept. TJ06, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

CRUCIBLE STEEL COMPANY OF AMERICA

Canadian Distributor—Railway & Power Engineering Corp., Ltd.

32 ALUNDUM Abrasive for your tool and die jobs*



Here's how Norton keeps

"Making better products... to make your products better"

Our motto is constantly being proved by our customers. Norton mounted wheels, for example, are hitting new highs in grinding efficiency. Outstanding new developments in abrasives and wheel construction eliminate loading and glazing, assuring best possible results in:

TOOL AND DIE GRINDING

Norton mounted wheels with sharp 32 ALUNDUM abrasive and VBE bond are the very best performers.

Advantages: Wheels need no costly dressing, hold form and give constant cutting action from start to finish — right down to the mandrel. "Best I ever had," reports a long experienced die finisher.

ROUGH GRINDING

For steel castings and weldments, mounted wheels of tough 44 ALUNDUM abrasive with VBE bond, and metal-mounted, are unequalled.

For snagging cast iron, wheels of sharp 32 ALUNDUM abrasive with VBE bond, and metal-mounted, outperform silicon carbide wheels consistently.

Advantages: Norton wheels give you the fastest cutting rate, with a marked increase of stock removed per wheel. "There has never been anything like them for speed and economy in our snagging," says the foreman of a leading foundry.

32 or 44 ALUNDUM Abrasive for your rough grinding

METAL-MOUNTING — *Another Norton Exclusive — You throw nothing away but the mandrel!*

Norton does it again! The mounted wheels are so securely anchored to the mandrel — *you use all of the abrasive!* No waste . . . all work! This radically improved method of locking the abrasive body to the mandrel is used on mounted wheels in most sizes and shapes, 5/16" diameter and larger. Molten metal, injected into the abrasive recess at high pressure, does it — and does it fine!

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The Iron Age Summary

Buyers Hedge in Tighter Market

More advance buying is tip-off that steel users are starting to worry about supplies.

Some are finding that day-to-day buying is no longer the smart thing to do.

▪ Some steel buyers this week are hedging against a further tightening of the market.

The growing tightness in supplies of flat-rolled products — sheet, strip, and galvanized sheets—is forcing users to place their orders farther ahead, "just in case."

Clear Sailing—There is little chance of a real shortage of any steel products. But there could be temporary pinches in supply until the mills adjust their schedules to momentary surges in demand.

The mills for the first time are beginning to see clear sailing ahead for the balance of the year. The pickup in demand has been a pleasant surprise considering the relative disinterest of the automotive, railroad, and oil and gas markets.

Warning Signs—The hand-to-mouth buying policy of some months back is no longer the smart thing. Already this week many old-time customers of some companies are running into trouble trying to get the steel they want when they want it.

Many users are now going farther afield than was the case a few weeks ago. This means steel output will be more uniform among products, companies, and steel-producing districts.

The Outlook—The steel operating rate will hit 75 pct of capacity —or more—before November. The average for fourth quarter could easily be 75 pct despite an expected leveling off in December. The current operating rate is already around 70 pct.

Both steel producers and steel buyers are watching the automotive market closely. If the new models go over with the public, Detroit could step into the market in a much bigger way than it has to date. This would bring about more jockeying for position on mill order books by all steel users.

Aces in the Hole—The mills are looking toward the railroads and the oil and gas industry as aces in the hole for the first half of next year. Neither of these major steel users has been buying anything of consequence, and both are normally major factors in the market.

Coupled with this is the expectation that there will be a certain amount of hedge buying in the second quarter of 1959 as the steel companies start negotiating with steel labor for a new contract. The possibility of labor trouble usually moves steel users to fatten their inventories in the weeks just prior to the contract expiration date.

Sheet Trading—In the Midwest, there's been a flurry of trading among some steel service centers (warehouses) of cold-rolled and hot-rolled sheet to meet regional surges in demand. Some spot shortages of hot-rolled sheets in certain sizes have been reported.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 1,944	Last Week 1,903	Month Ago 1,755	Year Ago 2,048
Ingot Index (1947-1949=100)	120.9	118.4	108.2	127.5
Operating Rates				
Chicago	83.0	79.0	76.0	82.0
Pittsburgh	64.5	65.0*	61.0	84.0
Philadelphia	76.5	76.0	72.0	81.0
Valley	52.5	52.5*	51.0	67.5
West	72.0	74.0	80.0	96.0
Cleveland	79.0	74.0*	54.0	86.5
Buffalo	66.0	59.0	56.0	100.0
Detroit	75.0	76.0	74.0	99.0
South	66.0	62.0*	53.5	70.0
South Ohio River	75.0	74.0*	77.0	77.0
Upper Ohio River	84.5	78.5	70.0	80.0
St. Louis	80.0	96.0*	75.0	82.0
Aggregate	72.0	70.5	65.0	82.0

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel, base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41**	$66.41*	$66.41*	$66.42
Scrap, No. 1 hvy (Gross ton)	$42.83	$43.50	$42.83	$39.33
No. 2 bundles	$28.83	$29.17	$29.17	$29.17
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	28.10
Copper, electrolytic	26.50	26.50	26.50	27.00
Lead, St. Louis	11.80	11.30*	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	96.75	94.50*	94.50	92.625
Zinc, E. St. Louis	10.50	10.00	10.00	10.00

**Reflects freight changes

Plating Equipment Orders Climb

Makers of plating machinery are cheered as sales continue second quarter gains.

There's some chance of price increases later on, but right now the market still belongs to the buyer.

▪ After a slump earlier in the year, plating equipment is climbing out of the sales doldrums. The rise, which started in second quarter, is now fullblown. Manufacturers are optimistic, confident that the curve will continue to head up during the fall and winter.

Curiously, Detroit, probably the industry's single biggest customer, is still holding back. The automakers are apparently waiting to see how new models sell, and which design features prove most popular, before going ahead with orders for new plating and anodizing equipment.

Bumper Metal Trends — Many plating equipment makers believe that automotive chrome use has reached a peak, will dwindle from here on in. Its big replacement, they believe, will be anodized aluminum. But both stainless steel and aluminum are real threats to the lush bumper market.

While naturally anxious for automotive orders, plating equipment makers are cheered by the fact that today's orders are coming from a broad cross-section of industry. The orders in many cases stem from the necessity of modernizing operations for lower-cost, more efficient production.

More Automation Due — The trend is unquestionably to more automation in plating. In many cases, customers have been convinced of the advantages, but reluctant to part with cash during a recession. Much the same picture prevails for semi-automatic equipment. There is eagerness to switch from manual to at least semi-automatic lines wherever business justifies the investment.

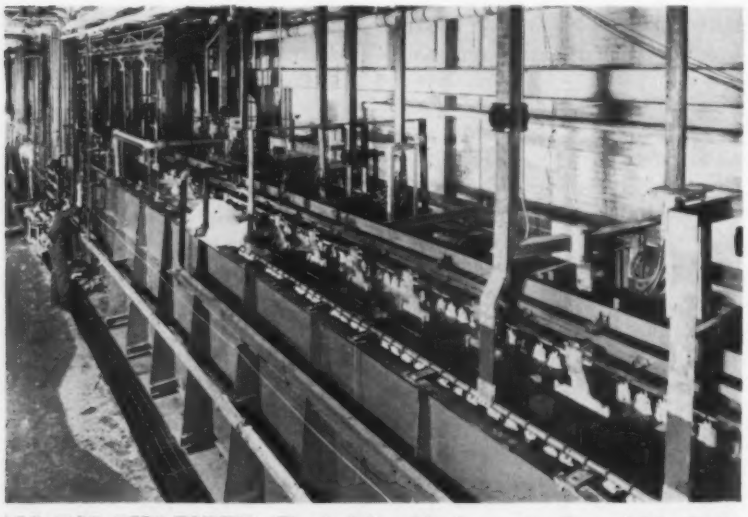
Sales campaigns are being stepped up, with manufacturers stressing that now is a good time to buy. They point out that backlogs are low, with deliveries covering only actual enginering and production time. For a good-sized line, this might be three to four months, plus perhaps two months for installation.

Price Prospects — Equipment makers are continuing to hold the price line, although labor and materials are both up. Industry executives are leery of admitting it, but there's a good chance that prices will rise as backlogs grow. But at present it's still a buyer's market.

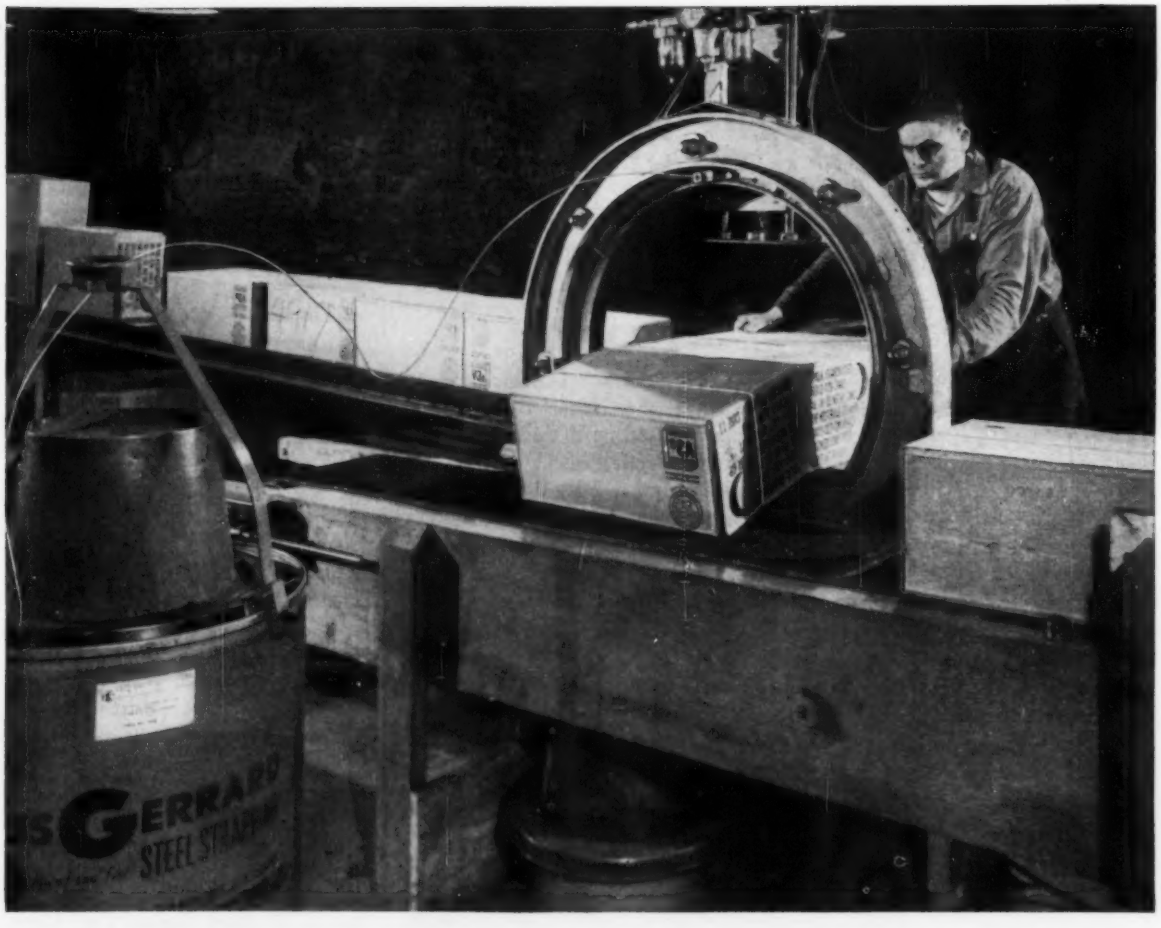
Earlier this year, anodizing machines were moving better than regular plating equipment. But some manufacturers believe this trend is slowing down. One reason suggested is a rediscovery of the joys of die-casting as a production process.

Improvements Aid — Improvements in plating processes are cheering equipment makers. Rectifiers for current control are now virtually standard on many lines, and work on better corrosion resistance, brighter plating, and better leveling to reduce buffing is now paying off.

Last but no means least, ample supplies of nickel permit heavy, long-lasting coatings. And equipment makers are cooperating with their customers in stressing the advantages of the process, now that materials are plentiful.



ALL FOR THE BUYER: The building block construction of this Cyclemaster plating machine from Udylite Corp. gives the customer the option of a wide range of plating capacities and processes.



Labor costs cut by 66%, yet production goes up 33%

Installation of two USS Gerrard Model 12 Automatic Strapping Machines has enabled the Natural Storage Company, Inc., Bonner Spring, Kansas, to cut their labor costs more than half. Yet, because the machines are *completely automatic*, the company's production of packaged rations for the Army has increased from 6,000 to 8,000 units a day! At the same time, the Gerrard Model 12 has enabled them to eliminate rejects caused by difficulty in observing close tolerances on strap placement and tension.

According to the company, the new Model 12's do a flawless job using 16-gauge USS Gerrard Round Steel Strapping with a 95,000 to 125,000 tensile strength. They have found that the round steel strap is less expensive—both initially (because there is more footage per pound) and in actual operation. And because the strapping is packaged in 500-pound drums, it means approximately 10 less shutdowns for strap changes a day.

The compact, easy-to-operate USS Gerrard Model 12 makes up to 24 cycles per minute on packages from 8″ x 2″ to 26″ x 20″. Its one-shot built-in lubrication system and rugged construction mean minimum service and maintenance. Packages are held firmly in place during the strapping operation by a compression device. Tension can be predetermined and maintained, and you don't need to adjust the machine for packages of varied shapes and sizes.

Your USS Gerrard sales representative can give you more details. Contact him soon for information on all USS Gerrard products.

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Sales Gains Scramble Delivery Schedule

Mills need nimble footwork to adjust rollings and shipments as demand picks up.

Service centers also do some juggling to fill orders for all their customers.

▪ The market pickup is already being reflected in mill rolling schedules and delivery estimates.

There are still products, notably shapes and plates, where demand is far from brisk. But for others—including sheets, strip, bar, and stainless—the delivery picture is changing rapidly.

Hot-rolled bar mills in the Midwest, for example, are shifting some grades from 30 to 60 day rolling cycles. This could double delivery time to the user. Where customer stocks are low the stretchout may be critical.

In the same market area cold finished bar deliveries are moving out several weeks. The reason: Cold finishers have wiped out finished stocks they had to fill orders. New orders require full processing time after the sale is made.

Much the same situation exists for sheet and strip mills. Some are becoming a little "vague" about exact delivery dates. And they are telling users to get their tonnages booked as far in advance as they can.

Others beside producers and users are feeling the added nip in the delivery air. Steel service centers are swapping stocks so all branches can meet buyer demands. In a few cases Midwest distributors are even filling local orders by shipping in sheet from their East Coast outlets.

Galvanized Sheet—This product, together with other coated sheet items, is leading the order advance of the flat-rolled steel group. Buying in **Eastern** markets is not at the high tempo maintained in the **Midwest.** But **Eastern** mills are pointing out the jam-up in deliveries at inland producing points as a warning to customers.

Plates and Shapes—Heavy steels still remain a disappointment. October orders will be better than those of the previous three months for many mills. But they will still be short of May-June levels. **Eastern** plate mills say customers are buying in spurts. Some producers there are picking up orders from Canadian plate users, cut off from their suppliers by the Canadian steel strike. In the **Midwest** both structurals and plate are still available on four-week delivery.

Stainless — Producers report a steady pickup in orders with a definate gain in automotive buying of cold-rolled strip. Mills are still booking October tonnages but feel longer deliveries are inevitable. Users haven't shown much swing to advanced buying. But mill order backlogs are starting to grow.

Rods—Future success of domestic rod mills will depend on how well they can compete against foreign producers, not other American mills, according to R. R. Snow, assistant vice president of U. S. Steel's American Steel & Wire Div.

Tinplate—Two more companies—Kaiser Steel and Granite City Steel—have announced increases in tin mill product prices for Nov. 1. Kaiser's boost of 25¢ a base box matches that made recently by Columbia-Geneva Steel Div. of U. S. Steel Corp. Granite City's increase of 35¢ a base box preserves the 10¢ a base box differential existing in its producing area.

U. S. Steel says it has no intention of cutting, officially, its tinplate prices at Fairless Works to meet Bethlehem's lower prices. It's to be expected that it will meet whatever competition the Bethlehem price offers in the area.

Export Prices—New export prices from East Coast ports have been announced, effective Oct. 2, by U. S. Steel Export Co. These advances reflect "recent increases in rail transportation rates to North Atlantic seaports in relation to its competitive position in export markets," the company says.

Soviet Steel—Russian structural steel, pipe, rails, and other heavy steel products are now appearing in world markets, says Max D. Howell, executive vice president of the American Iron and Steel Institute. He reasons the Reds are turning to outside markets because "the capacity of (their) steel industry appears to have expanded more rapidly than (their) consumer fabricating capacity has been permitted to develop."

Chromium Carbide—A new type of chromium carbide, offering users a price reduction of more than 25 pct, has been announced by Electromet Div. of Union Carbide Corp. This type "M" powder will supplement the type "O" chromium carbide previously available.

PURCHASING AGENT'S CHECKLIST

There won't be any leveling off in metal prices in next few years, survey indicates. **P. 42**

Russian tin dumping nearly wrecked Bolivia's economy. **P. 45**

Hand-to-mouth steel buying may boomerang, Editor-in-Chief Tom Campbell warns. **P. 48**

COMPARISON OF PRICES

(Effective Oct. 7, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Oct. 7 1958	Sept. 30 1958	Oct. 9 1958	Oct. 8 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30*	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.30	$10.30	$10.30	$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloy blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

	Oct. 7 1958	Sept. 30 1958	Sept. 9 1958	Oct. 8 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57**	$70.57*	$70.57*	$70.51
Foundry, Southern Cin'ti	73.87	73.87	73.87	71.65
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07**	70.57*	70.07*	70.01
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41**	$66.41*	$66.41*	$66.42
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$44.50	$44.50	$44.50	$40.50
No. 1 steel, Phila. area	41.50	41.50	39.50	38.00
No. 1 steel, Chicago	42.50	44.50	44.50	39.50
No. 1 bundles, Detroit	32.50	32.50	36.50	30.50
Low phos., Youngstown	45.50	45.50	46.50	41.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	51.50	54.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	50.50
No. 1 mach'y cast, Chicago	53.50	53.50	53.50	44.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$42.84	$43.50	$42.83	$39.33
No. 2 bundles	28.84	29.17	29.17	29.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50	$14.50	$14.50	$15.38
Foundry coke, prompt	$18-18.50	$18-18.50	$18-18.50	$17.50-$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	26.50	26.50	27.00
Copper, Lake, Conn.	26.50	26.50	26.50	27.00
Tin, Straits, N. Y.	96.75†	94.50*	94.50	92.625
Zinc, East St. Louis	10.50	10.00	10.00	10.00
Lead, St. Louis	11.80	11.30*	10.80	13.80
Aluminum, virgin ingot	26.80	26.80	26.80	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised. ** Reflects freight changes.

Finished Steel Composite

Weighed index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Pig Iron Restrains Scrap Price Rise

Mills are beginning to make use of their idle blast furnace capacity.

Scrap prices are at the highest point in many months—as high as mills want to pay.

■ Idle blast furnace capacity is throwing a wet blanket on hopes for a scrap market boom. Scrap prices are at a point where mills who have plenty of pig iron capacity are ready and willing to light their furnaces rather than pay a higher price for scrap.

This was demonstrated clearly in Chicago last week. When the prices of railroad and industrial grades neared $50, the mills began putting on blast furnaces. At least nine furnaces were lighted in the Chicago district.

One mill now has all of its eight furnaces going and reportedly has reduced its scrap buying from 125,000 tons a month to around 50,000.

Idle blast furnaces in Pittsburgh bar any big price climb for scrap in that district. One mill spokesman says that the mills will not follow prices much past $45 for No. 1 Heavy Melting — the current price. If the price hits $50, blast furnaces offer clearcut savings, he says.

Despite a $2 break in Chicago, the market on the whole is firm. While no runaway boom is in the cards, the gradually-increasing steel operating rate is assurance that prices will hold steady during the fourth quarter.

The Chicago decline brought a 67¢ drop in the IRON AGE No. 1 Heavy Melting Composite Price to $42.83.

Pittsburgh — In a more active market, the price of No. 2 heavy melting is up $1 and prices of other grades are holding firm. Two local mills and two nearby mills are now buying scrap in the district. Trading is marked by special quality, source, and freight arrangements. No single order is large enough to peg the market clearly.

Chicago—An increasingly firm tone at the broker-dealer level is evident in spite of last week's sharp market break. The break occurred when a list of factory bundles moved at $46-$47—three dollars under the quoted price. This week one mill offered to buy No. 1 heavy melting at $43, then withdrew the offer.

Philadelphia—Prices are at the highest point this year and dealers are taking advantage of the situation to break up large accumulations of scrap. General feeling is that prices won't go much higher, if at all. A local mill bought No. 2 bundles at $26 last week — $1 above the quoted price.

New York — Prices are unchanged here this week. Brokers claim recent advances in an adjacent consuming district have not taken enough tonnage to affect this market.

Cleveland—The Cleveland market edged up 50¢ on a local sale at $42. There were also some Valley sales at prevailing $45 price for No. 1 dealer material. Secondary grades are being sold with prime grades in Cleveland. But biggest interest is in production scrap for electric furnaces.

St. Louis — Prices remained steady as a leading mill bought at prevailing prices. However, a smaller mill lowered its buying price on a few items by $1. Movement of scrap here is slowing down. Cast iron car wheels are off $1.

Detroit—Settlement of auto industry contract negotiations hasn't created any increase in the demand for scrap by local mills and the market remains sluggish. But dealers hopefully expect improved activity next month and appear to be waiting out the current lull.

Birmingham — Two of the district's larger openhearth consumers returned to the market this week with increases of $3 a ton on most grades. There was good reaction by dealers who have been holding out for an increase.

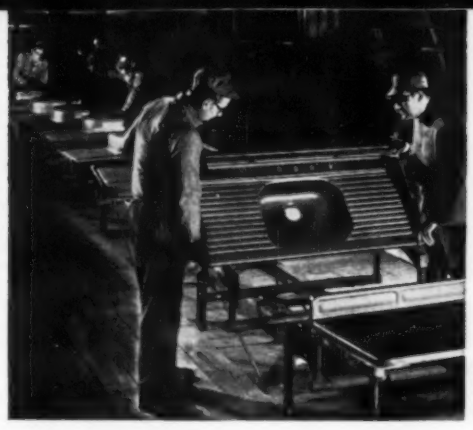
Cincinnati—The market dropped $1 on prime grades in sympathetic decline with other areas. But major mills in the district are in the market and brokers are not having any trouble covering orders.

Buffalo—Dealers report no sales here. Prices are holding steady and inventories continue to increase.

Boston — Primary openhearth grades and cast grades have moved up $1, based on general market strength.

West Coast—The scrap market here is at a standstill. Exporters are stretching out their orders through the last quarter. Flow of scrap is slow but ample for the little needed by the mills and for exporting.

Houston—The market weakened slightly with the withdrawal of a district mill. The export market is dormant, although there is promise of cargoes next month. Demand for cast has increased.



Finishing operations *on sink tops fabricated from Youngstown Porcelain Enameling Drawing Quality Steel Sheets are handled on an assembly line basis prior to porcelain enameling.*

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Youngstown cold-rolled steel sheets

Today's homemaker demands a kitchen that combines convenience, style and durability—qualities found only in a *steel* kitchen.

These smartly designed, functional units by Youngstown Kitchens Division of American-Standard will not warp or split, are vermin-proof, quiet operating, and finished in baked-on enamel in warm, long-lasting colors. Quality control standards require commercial quality cold-rolled sheets like that produced by Youngstown Sheet and Tube Company. This quality-controlled steel provides: Increased Production—Fewer Rejects—Accurate, Fast Forming—Reduced Fabrication and Die Costs.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence".

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY

Manufacturers of Carbon, Alloy and Yoloy Steel, Youngstown, Ohio

SCRAP PRICES *(Effective Oct. 7, 1958)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	44.00 to 45.00
No. 1 factory bundles	48.00 to 49.00
No. 2 bundles	31.00 to 32.00
No. 1 busheling	44.00 to 45.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch'gs plate	49.00 to 50.00
Heavy turnings	34.00 to 35.00
No. 1 RR hvy. melting	47.00 to 48.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR specialties	52.00 to 53.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	44.00 to 45.00
Heavy breakable cast.	42.00 to 43.00
Stainless	
18-8 bundles and solids	225.00 to 230.00
18-8 turnings	120.00 to 125.00
430 bundles and solids	125.00 to 130.00
410 turnings	50.00 to 60.00

Chicago

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	46.00 to 47.00
No. 2 bundles	29.00 to 30.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	21.00 to 22.00
Mixed bor. and turn.	23.00 to 24.00
Shoveling turnings	23.00 to 24.00
Cast iron borings	22.00 to 23.00
Low phos. forge crops	52.00 to 53.00
Low phos. punch'gs plate	49.00 to 50.00
Low phos. 3 ft and under	48.00 to 49.00
No. 1 RR hvy. melting	48.00 to 49.00
Scrap rails, random lgth.	53.00 to 54.00
Rerolling rails	64.00 to 65.00
Rails 2 ft and under	59.00 to 60.00
Angles and splice bars	55.00 to 56.00
RR steel bar axles	71.00 to 72.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast.	53.00 to 54.00
Cupola cast.	47.00 to 48.00
Heavy breakable cast.	41.00 to 42.00
Cast iron wheels	41.00 to 42.00
Malleable	57.00 to 58.00
Stove plate	44.00 to 45.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	215.00 to 220.00
18-8 turnings	125.00 to 130.00
430 bundles and solids	115.00 to 120.00
430 turnings	65.00 to 70.00

Philadelphia Area

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	37.00 to 38.00
No. 1 dealer bundles	41.00 to 42.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	41.00 to 42.00
Machine shop turn.	20.00 to 21.00
Mixed bor. short turn.	20.00 to 21.00
Cast iron borings	20.00 to 21.00
Shoveling turnings	23.00 to 25.00
Clean cast. chem. borings	30.00 to 31.00
Low phos. 5 ft and under	43.00 to 44.00
Low phos. 2 ft, punch'gs	44.00 to 45.00
Elec. furnace bundles	42.00 to 43.00
Heavy turnings	33.00 to 35.00
RR specialties	47.00 to 48.00
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	43.00 to 44.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$37.50 to $38.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	37.50 to 38.50
No. 2 bundles	25.00 to 26.00
Machine shop turn.	18.00 to 19.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	45.00 to 46.00
Rails, random length	49.00 to 50.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	44.00 to 45.00
Hvy. breakable cast.	36.00 to 37.00
Drop broken cast.	47.00 to 48.00

Youngstown

No. 1 hvy. melting	$44.00 to $45.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Low phos. plate	45.00 to 46.00

Cleveland

No. 1 hvy. melting	$41.00 to $42.00
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	41.00 to 42.00
No. 1 factory bundles	43.50 to 44.50
No. 2 bundles	27.50 to 28.50
No. 1 busheling	41.00 to 42.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Cut structural & plates, 2 ft & under	47.00 to 48.00
Drop forge flashings	41.00 to 42.00
Low phos. punch'gs plate	42.00 to 43.00
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	47.00 to 48.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	57.00 to 58.00
Steel axle turnings	25.00 to 26.00
Railroad cast.	50.00 to 51.00
No. 1 machinery cast.	49.00 to 50.00
Stove plate	45.00 to 46.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	220.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$36.00 to $37.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	27.00 to 28.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$38.00 to $39.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	40.00 to 41.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
No. 1 RR hvy. melting	45.00 to 46.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	53.00 to 54.00
Angles and splice bars	46.00 to 47.00
RR specialties	46.00 to 47.00
Cupola cast.	48.00 to 49.00
Heavy breakable cast.	38.00 to 39.00
Cast iron brake shoes	38.00 to 39.00
Stove plate	42.00 to 43.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	60.00 to 61.00
Unstripped motor blocks	39.00 to 40.00

Birmingham

No. 1 hvy. melting	$39.00 to $40.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	39.00 to 40.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	39.00 to 40.00
Machine shop turn.	24.00 to 25.00
Shoveling turnings	25.00 to 26.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	40.00 to 41.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	46.00 to 47.00
Structural and plate, 2 ft	45.00 to 46.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	48.00 to 49.00
Rails, 18 in. and under	51.00 to 52.00
Angles and splice bars	48.00 to 49.00
Rerolling rails	59.00 to 60.00
No. 1 cupola cast.	54.00 to 55.00
Stove plate	53.00 to 54.00
Cast iron car wheels	43.00 to 44.00
Unstripped motor blocks	43.00 to 44.00

New York

Brokers buying prices per gross ton on cars.

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	28.00 to 29.00
No. 2 dealer bundles	19.00 to 20.00
Machine shop turnings	10.00 to 11.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	13.00 to 14.00
Clean cast. chem. borings	24.00 to 25.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	36.00 to 37.00
Heavy breakable cast.	34.00 to 35.00
Stainless	
18-8 prepared solids	180.00 to 185.00
18-8 turnings	80.00 to 85.00
430 prepared solids	70.00 to 75.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$31.00 to $32.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	31.00 to 32.00
Drop forge flashings	30.00 to 31.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Heavy breakable cast.	30.00 to 31.00
Mixed cupola cast.	38.00 to 39.00
Automotive cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	200.00 to 205.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	105.00 to 110.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 dealer bundles	29.00 to 30.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	12.00 to 13.00
Clean cast. chem. borings	19.00 to 20.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	32.00 to 33.00

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furn 1 ft and under (foundry)	43.00
No. 1 cupola cast.	42.00

Seattle

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	22.00
No. 1 cupola cast.	36.00
Mixed yard cast.	36.00

Hamilton, Ont.

No. 1 hvy. melting	$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact., prep'd.	30.00
Bush., new fact., unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	$39.00 to 41.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	34.00
No. 2 bundles	25.00
Machine shop turn.	17.00
Shoveling turnings	20.00
Cut structural plate 2 ft & under	$44.50 to 45.00
Unstripped motor blocks	36.50 to 37.50
Cupola cast.	45.50 to 46.50
Heavy breakable cast.	30.00 to 31.00

CIRCA 600 B.C.

Under the feet of a sphinx at Karnak, Egypt, Giovanni Belzoni, Italian traveler and explorer of the early 19th Century, discovered a sickle wrought of iron—supposed to have been placed there at least 600 years before the Christian era.

The sickle, oldest of reaping instruments, has given way in most parts of the world, first to the cradle, and now to mowing and reaping machines.

These modern tools of agriculture—of industry, transportation, construction, and the military—demand iron and steel in millions of tons. And scrap is an indispensable ingredient.

For the purchase or sale of iron or steel scrap . . .

phone or write "Your Chicago Broker"

M. S. KAPLAN COMPANY

231 S. La Salle St., Chicago

Telephone ANdover 3-3900

Pressure Is On Copper Price

Some in the trade are starting to predict a higher price by the year's end.

It's a combination of better demand, and a supply cut due to strikes.

■ The pressure is building up on copper prices. Some observers are even flatly predicting a higher producers' price before the end of the year.

Oft-quoted, though admittedly erratic, barometers are (1) scrap gyrations, and (2) custom smelter prices.

Holding Back Scrap—The scrap price has been steadily creeping up. Now smelters say it is getting harder to buy scrap. Many dealers are apparently holding back for even better prices they expect in the near future.

Custom smelters are doing good business at 27¢ per lb, ½¢ higher than producers. Custom smelters react to the market much more quickly than producers, so this would seem to indicate a definite firming.

Sales Moving Up—There is no argument on this from producers. They are all bullish. The sales vice president of one copper company cautions that "business is not skyrocketing by any means," but he says he is very pleased with the "steady increase in buying."

Also strengthening the contention of the "bulls" are several strikes. Five Northern Rhodesian mines have been closed since Sept. 13. While little of this metal would have come to the U. S., buyers at its usual market, England, are taking metal from other sources, like Chile, some of which would have been sold here.

Strikes — International Nickel Co. has been idle since Sept. 24. They were turning out copper at the rate of 100,000 tons annually.

Kennecott reports a jurisdictional dispute at Chino, N. M., has stopped operations there. Production had been at the rate of about 60,000 tons per year.

Little is actually known about conditions in Africa. But at Inco, early this week the company and union were not even "in communications."

And Kennecott contends that what the union is asking is "a point of law which must be clarified by the National Labor Relations Board."

Supply—The valve on the price picture is the amount of metal unsold at the refineries. The Copper institute reported this as 436,532 tons in the world at the end of August, of which 215,560 tons were in the U. S. There appears to be little doubt that this has been reduced since, but not enough to make any real difference.

Also, observers say some of the buying today is speculation, based on expectation of long strikes. Should the Inco or African strikes come to an end within a week or two it would change the whole picture.

Lead, Zinc

There appears to be no rush for the border by foreign miners and refiners of zinc and lead, affected by the quotas.

The U. S. Customs Bureau, administering the program, says some entries have been made against the quotas, "but the number is not high."

Wait Awhile—The Bureau attaches no significance to this, nor to the total metal and ore that will enter under quotas in the first quarter of the program. It points out that metal and ore exported from an affected country before Sept. 22 will not be covered by quotas. Strong rumors of, and actual announcement of, the quotas were enough in advance to give suppliers a chance to move.

Tin prices for the week: Oct. 1—95.00; Oct. 2—95.50; Oct. 3—96.875; Oct. 6—96.75; Oct. 7—96.75.*

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in September based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	26.50
Copper, Lake	26.50
Straits Tin, New York	94.048
Zinc, E. St. Louis	10.00
Lead, St. Louis	10.68
Aluminum ingot	26.80

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	26.50	25-26.50	7/17/58
Copper (CS)	27.00	26.50	10/2/58
Copper (L)	26.50	25.00	7/17/58
Lead, St. L.	11.80	11.30	10/2/58
Lead, N. Y.	12.00	11.50	10/2/58
Magnesium ingot	38.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/58
Titanium sponge	185-205	200-250	4/1/58
Zinc, E. St. L.	10.50	10.00	10/2/58
Zinc, N. Y.	11.00	10.50	10/2/58

ALUMINUM: 99% ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colbourne Canada. ZINC: prime western. TIN: see above; other primary prices, pg. 134.

How 4 Frasse tubes

PUT "LEO" TO SLEEP

This newly developed "Cap-Chur" gun fires a dart-like, self injecting syringe with precise accuracy... has an effective range of 50 yards. The syringe travels at 1200 feet per minute—injects its immobilizing solution 5 seconds after firing... puts an animal to sleep in approximately 90 seconds.

Four types of tubing are used in this modern "blow gun". The barrel is a *seamless steel* tube... the compression chamber is a *welded steel* tube... the syringe is an *aluminum* tube... and the needle is a *stainless steel* tube. Yet, despite this mixed requirement, all four types are furnished by Frasse—with never a delivery delay or rejection since production began.

So, if you use tubing in your product—want trouble-free quality in a hurry... *it will pay to make Frasse your source for tubing.* Complete Frasse tubing stocks enable you to select the type and size best suited to your needs... and Frasse tubing specialists are always available to assist you with any problem involving a tubular product.

Courtesy:
Crosman Arms Co., Inc.

FRASSE... for Tubing

Seamless and Welded Mechanical Tubing
Pressure and Hydraulic Tubes
Centrifugally Spun Tubing
Stainless Tubing, Seamless and Welded
Stainless Pipe, Valves and Fittings
Aluminum Tubing, Holobar, Pipe and Fittings
PVC Plastic Pipe, Valves and Fittings

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HOward 3-8655

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JAckson 9-6861

LYNDHURST, N. J. • ROCHESTER, N. Y.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.125-.249	.250-3.
1100, 3003	45.7	43.8	42.8	43.8
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6063 T-6
6- 8	43.7-44.3	51.1-54.8
12-14	42.7-44.3	53.0-56.8
24-26	43.3-44.7	52.8-57.8
36-38	46.7-49.3	56.9-60.8

Screw Machine Stock—2011-T-3

Size*	¼	5/16-⅜	½-1	1¼-1½
Price	63.0	61.3	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade		67.9	69.0	77.9	108.1
AZ31B Spec.		93.3	95.7	109.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade.. (AZ31C)	69.6	70.7	75.6	89.3
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.3

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Shot, blocks		87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.63		46.88	49.83
Brass, 70/30	43.57	44.11	43.51	46.45
Brass, Low	46.03	46.57	45.97	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83		43.14	51.24
Munts Metal	45.95		41.76	
Comm. Bs.	48.30	48.84	48.24	50.80
Mang. Bs.	51.57		45.67	
Phos. Bs. 5%	68.59		69.09	

Free Cutting Brass Rod 29.28

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $8.50-$10.10; alloy, $15.95; Plate, HR, commercially pure, $6.00-$6.75; alloy, $8.75-$9.50. Wire, rolled and/or drawn, commercially pure, $6.50-$7.00; alloy, $10.00-$11.50; Bar, HR or forged, commercially pure, $5.25-$5.50; alloy, $5.25-$6.35; billets, HR, commercially pure, $4.10-$4.35; alloy, $4.10-$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.45
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb).... $2.00 to $2.07
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 35.00 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ... $70 to $80
Lithium, 98% ..... $11.00 to $14.00
Magnesium, sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask, f.o.b. New York ..... $238 to $241
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $15 to $17
Platinum, dollars per troy oz... $57 to $60
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 89.125
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 28.00
- No. 120 ..... 27.25
- No. 123 ..... 26.50

80-10-10 ingot
- No. 305 ..... 32.25
- No. 315 ..... 30.25

88-10-2 ingot
- No. 210 ..... 39.25
- No. 215 ..... 35.00
- No. 245 ..... 31.75

Yellow ingot
- No. 405 ..... 23.50

Manganese bronze
- No. 421 ..... 25.25

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.75-25.00
- 0.60 copper max. 24.50-24.75

Piston alloys (No. 122 type).. 24.25-25.25
No. 12 alum. (No. 2 grade)... 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)... 24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective Oct. 6, 1958)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22⅛	21¾
Yellow brass	17	15¼
Red brass	19⅜	19
Comm. bronze	20⅛	19⅞
Mang. bronze	15⅞	14⅞
Yellow brass rod ends	16¾	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 23¾
No. 2 copper wire 21⅞
Light copper 19⅝
*Refinery brass 21⅜
Copper bearing material 19⅝

* Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 23¾
No. 2 copper wire 21⅞
Light copper 19⅝
No. 1 composition 20½
No. 1 comp. turnings 20
Hvy. yellow brass solids 14½
Brass pipe 16½
Radiators 16½

Aluminum

Mixed old cast. ..... 12½—13
Mixed new clips ..... 15½—16½
Mixed turnings, dry ..... 13½—14½

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 20¼—20¾
No. 2 copper wire ..... 18½—18¾
Light copper ..... 16¼—16¾
Auto radiators (unsweated). 13 —13½
No. 1 composition ..... 17 —17½
No. 1 composition turnings.. 16 —16½
Cocks and faucets ..... 13¼—13¾
Clean heavy yellow brass .... 11½—12
Brass pipe ..... 13¼—13¾
New soft brass clippings .... 13¾—14¼
Industrial castings ..... 9¼ — 9¾
No. 1 brass rod turnings .... 11¼—11¾

Aluminum

Alum. pistons and struts .... 5¼ — 5¾
Aluminum crankcases ..... 9¼ — 9¾
1100 (2S) aluminum clippings 12¾—13¼
Old sheet and utensils ..... 9¼ — 9¾
Borings and turnings ..... 6¼ — 6¾
Industrial castings ..... 9¼ — 9¾
2024 (24S) clippings ..... 10¾—11¼

Zinc

New zinc clippings ..... 4 — 4⅛
Old zinc ..... 3 — 3¼
Zinc routings ..... 1⅝— 2
Old die cast scrap ..... 1⅛— 1⅜

Nickel and Monel

Pure nickel clippings 52-54
Clean nickel turnings 37-40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 30-32
Clean Monel turnings 30-32
Old sheet Monel 26-28
Nickel silver clippings, mixed 18
Nickel silver turnings, mixed 15

Lead

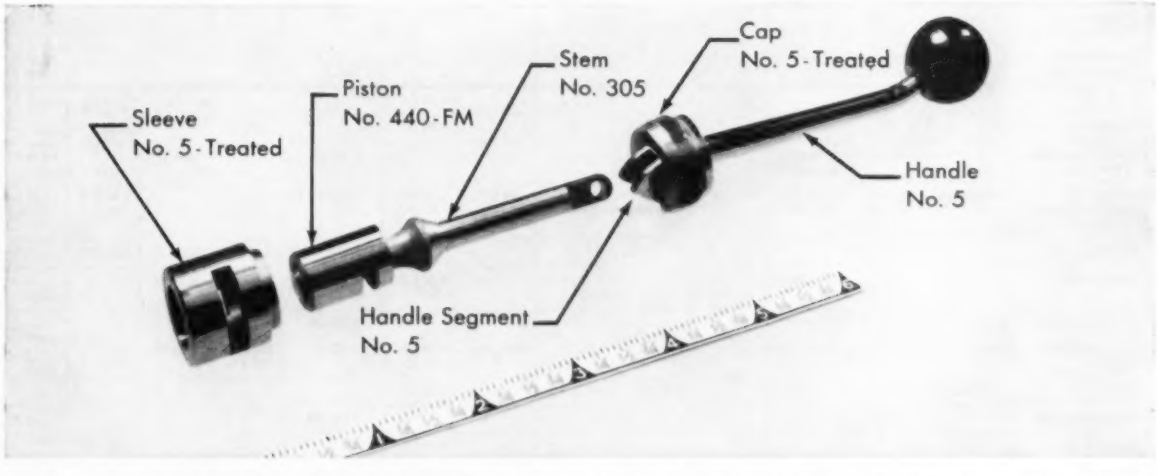
Soft scrap lead ..... 7½— 7¾
Battery plates (dry) ..... 2½— 2¾
Batteries, acid free ..... 2 — 2¼

Miscellaneous

Block tin ..... 75 —76
No. 1 pewter ..... 59 —60
Auto babbitt ..... 39 —40
Mixer common babbitt ..... 9½—10
Solder joints ..... 13¼—13¾
Siphon tops 42
Small foundry type ..... 10½—10¾
Monotype ..... 10¼—10½
Lino. and stereotype ..... 9¼— 9½
Electrotype ..... 8¼— 8½
Hand picked type shells .... 6¼— 6⅝
Lino. and stereo. dross ..... 2¼— 2½
Electro dross ..... 1⅝— 2

for strength, corrosion resistance and sales appeal

...it had to be Stainless



In this new one-handle mixing faucet all the important working parts are made of wear-resistant, corrosion-proof Carpenter stainless steels. Once you select stainless steel by Carpenter, you can forget about corrosion. You can design for high stresses, disregard maintenance problems, stop worrying about temperature variations and be assured that fabrication will be easy. And you not only get the help of consumer-acceptance of stainless products, but also the long experience of Carpenter. From the lab work through final production, Carpenter staffmen have the knowledge and the data. Call your Carpenter representative for the engineering information on stainless that you need. The Carpenter Steel Company, 121 W. Bern Street, Reading, Pa.

Carpenter STEEL

The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		15.50 *C11*
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, D1,D2,P11*	7.575 *G3*	10.80 *D2*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*			5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *S1, R3*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	~~$80.00~~ *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.85 *K1*	9.275 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.325 *J3* 9.30 *C1*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$113.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective Oct. 6, 1958)

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* *1.25* lb. base box	Electro** *0.25* lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 50¢ from 1.25-lb. coke base box price. Can-making quality blackplate 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb. 0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.775 *U1*			$10.15 *U1*	$8.85 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.15 *B3*	$8.85 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.05 *U1, Y1*	$8.75 *I3, U1,Y1*	7.50 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$8.85 *G2*	7.60 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, N3,S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *N3, S1*	7.225 *N3, S1*,R3*	7.525 *R3, S1*	9.275 *S1, R3*				$8.75 *R3*	
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Donora, Pa. Aliquippa, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3*	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.05 *W5, J3*	$8.75 *U1, J3*	7.50 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.05 *W5, W3*	$8.75 *W5, W3*	7.50 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.85 *K1*	7.525 *K1*				8.275 *K1*	10.575 *K1*			$10.80 *K1*	$9.50 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$10.80 *C7*	$9.50 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.15 *T2*	$8.85 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective Oct. 6, 1958)

*7.425 at Sharon-Niles is 7.225

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.475 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, N. J. Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mass. Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Ohio Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,S1*	9.025 *C10*	7.925 *S1*	5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Cal. Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		8.625 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6*	6.425 *B2*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield, Ala. City, Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Oct. 6, 1958) * Special Quality.

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Dearborn Div., Sharon Steel Corp.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N3 Niles Rolling Mill Div., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.

Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Oct. 6, 1958)

The Aluminum Man*...

*Specialist in metals for many years, and salesman for Alcoa Distributor, Edgcomb Steel of New England, Inc., since 1947, Russell Gregory is typical of the men whose knowledge of aluminum uses and applications is helping to forward the future of industry.

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Supply Co., Inc. . . . FAirfax 3-1612

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Ducommun Metals & Supply Co.
LUdlow 8-0161
Pacific Metals Company, Ltd.
RAymond 3-5431
San Diego
Ducommun Metals & Supply Co.
GRidley 7-3141
San Francisco
Pacific Metals Company, Ltd.
UNderhill 3-5600

COLORADO
Denver
Marsh Steel Corp., KEystone 4-1241
Metal Goods Corp., DUdley 8-4141

CONNECTICUT
Milford
Edgcomb Steel of New England, Inc.
TRinity 4-1631
Windsor
Whitehead Metal Products Co., Inc.
MUrdock 8-4921

FLORIDA
Jacksonville
The J. M. Tull Metal &
Supply Co., Inc. . . . EVergreen 7-5561
Miami
The J. M. Tull Metal &
Supply Co., Inc. . . . NEwton 5-0365
Tampa
The J. M. Tull Metal &
Supply Co., Inc. . . . 3-6741

GEORGIA
Atlanta
The J. M. Tull Metal &
Supply Co., Inc. . . . JAckson 5-3871

IDAHO
Boise
Pacific Metal Co. . . . 3-6468

ILLINOIS
Chicago
Central Steel & Wire Company
REpublic 7-3000
The Corey Steel Co., BIshop 2-3000
Steel Sales Corp. . . . BIshop 7-7700

INDIANA
Indianapolis
Steel Sales Co. of Indiana, Inc.
LIberty 6-1535

KANSAS
Wichita
Marsh Steel Corp., WHitehall 2-3231
Metal Goods Corp., AMherst 5-3191

KENTUCKY
Louisville
Williams & Co., Inc., JUniper 3-7781

LOUISIANA
New Orleans
Metal Goods Corp., JAckson 2-7373

MARYLAND
Baltimore
Whitehead Metal Products Co., Inc.
EAstern 7-3200

MASSACHUSETTS
Cambridge
Whitehead Metal Products Co., Inc.
TRowbridge 6-4680
Roxbury
Eastern Metal Mill Products Co.
HIghlands 2-5900

MICHIGAN
Detroit
Central Steel & Wire Company
TWinbrook 2-3200
Steel Sales Co. of Michigan
TYler 6-3000

MINNESOTA
Minneapolis
Steel Sales Co. of Minnesota
STerling 1-4893

MISSOURI
Kansas City, North
Marsh Steel Corp. . . . GRand 1-3505
Metal Goods Corp. . . . GRand 1-3516
St. Louis
Metal Goods Corp., HArrison 7-1234
Steel Sales Co. of Missouri, Inc.
PRospect 1-5255

NEW HAMPSHIRE
Nashua
Edgcomb Steel of New England, Inc.
TUxedo 3-7731

NEW JERSEY
Harrison
Whitehead Metal Products Co., Inc.
HUmbolt 5-5900
Hillside
Miller Steel Co., Inc., WAverly 6-6000
Kenilworth
Jones & Laughlin Steel Corp.
MUrdock 6-6900

NEW YORK
Albany
Eastern Metals Warehouse, Inc.
89-3281
Buffalo
Brace-Mueller-Huntley, Inc.
VIctoria 8700
Whitehead Metal Products Co., Inc.
BEdford 3100
New York
(Brooklyn) Strahs Aluminum
Company, Inc., BRowning 2-7000
(L. I. City) Adam Metal Supply, Inc.
STilwell 6-7737
Henry B. Lust (circles)
CIrcle 6-1748
Manhattan Brass & Copper Co.
WOrth 6-1200
Whitehead Metal Products Co., Inc.
WAtkins 4-1500
Rochester
Brace-Mueller-Huntley, Inc.
COngress 6-6560
Metal Supply, Inc. . . . LOcust 2-4260
Sachs Metal Supply Co.
FAirview 8-1710
Syracuse
Brace-Mueller-Huntley, Inc.
HOward 3-3341
Whitehead Metal Products Co., Inc.
GRanite 4-4641

NORTH CAROLINA
Charlotte
Edgcomb Steel Co., FRanklin 5-3361

OHIO
Cincinnati
Central Steel & Wire Company
AVon 1-2230
Williams & Co., Inc. . CApitol 1-3000
Cleveland
A. M. Castle & Co., Nottingham
Steel & Aluminum Division
ATlantic 1-5100
Williams & Co., Inc. . . . UTah 1-5000
Columbus
Williams & Co., Inc.
AXminster 4-1623
Dayton
Ohio Metal & Manufacturing Co.
CLearwater 3-4192
Toledo
Williams & Co., Inc.
GReenwood 5-8661

OKLAHOMA
Tulsa
Metal Goods Corp. . . . GIbson 7-4101

OREGON
Portland
Pacific Metal Co. . . . CApitol 7-0693

PENNSYLVANIA
Philadelphia
Edgcomb Steel Co., GArfield 3-6300
Metal Supply Co., STevenson 7-0220
Whitehead Metal Products Co., Inc.
BAldwin 9-2323
Pittsburgh
Williams & Co., Inc. . . . CEdar 1-8600
York
Edgcomb Steel Co. . . . 47-1411

RHODE ISLAND
Slatersville
Edgcomb Steel of New England, Inc.
POplar 7-0900

TENNESSEE
Memphis
Metal Goods Corp., WHitehall 8-3407

TEXAS
Dallas
Metal Goods Corp., FLeetwood 1-3271
Houston
Metal Goods Corp. . . . FAirfax 3-0141

UTAH
Salt Lake City
Pacific Metals Company, Ltd.
DAvis 2-3461

WASHINGTON
Seattle
Pacific Metal Co. . . . MAin 2-6925

WISCONSIN
Milwaukee
Central Steel & Wire Company
HUmboldt 1-5000
Steel Sales Co. of Wisconsin
Hilltop 2-2020

Aluminum Products—Hawaii,
Honolulu 14, **HAWAII**

Aluminum Company of America, 958-K Alcoa Building, Pittsburgh 19, Pennsylvania

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25			
Cleveland *R3*						15.35
So. Chicago *R3*				10.10		.....
Ensley *T2*	5.75	6.725				.....
Fairfield *T2*		6.725		10.10	6.875	.....
Gary *U1*	5.75				6.875	.....
Huntington *C16*		6.50				.....
Ind. Harbor *Y1*				10.10		.....
Johnstown *B3*		6.725				.....
Joliet *U1*			7.25			.....
Kansas City *S2*				10.10		15.35
Lackawanna *B3*	5.75	6.725	7.25		6.875	.....
Lebanon *B3*			7.25			15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.50	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50
Foundry, beehive (f.o.b.)	$18.00 to $18.50
Foundry oven coke	
Buffalo, del'd	$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*N5*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	26.00	40	100,110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ⅛-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.00
Midwest	17.00

(Effective Oct. 6, 1958)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187		212	193	9.00	9.55
Aliquippa *J3***	173	190			190	9.00	9.675
Atlanta *A8***	175	192		214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4*****	173	190	172	212	196	8.65	9.325
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawf'dsv. *M4***	175	192		214	198	9.10	9.775
Donora, Pa. *A5*	173	187		212	193	9.00	9.55
Duluth *A5*	173	187		212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187		212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192		217	198	9.25	9.80†
Jacksonville *M4*	184-1	197		219	203	9.10	9.775
Johnstown *B3***	173	190	172		196	9.00	9.675
Joliet, Ill. *A5*	173	187		212	193	9.00	9.55
Kokomo *C9*	175	189		214	195*	9.10	9.65*
L. Angeles *B2*****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192		217	198*	9.25	9.80†
Minnequa *C6*	178	192	177	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....		193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210			213	9.60	10.15
Rankin, Pa. *A5*	173	187			193	9.00	9.55
So. Chicago *R3*	173	187			193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65‡	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7* ‡	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

IT PAYS TO STANDARDIZE ON **STANSCREW**

Stanscrew *standard* fastener does *special* job on free-wheeling hubs for "Jeep"

Attaching POWER-LOCK free-wheeling hubs to Willy's 4-wheel drive "Jeeps" calls for something pretty "special" in fasteners.

To begin, the fasteners must be tough and dependable . . . must have the ability to stand up under the punishment that is normal for an "off the road" vehicle. Since these hubs are sold separately, the fasteners also must present an appearance that builds consumer appeal. And they must be completely uniform to facilitate installation.

The Cutlas Tool and Manufacturing Company, Lyons, Ill., manufacturers of this Willys approved accessory, outlined the problem to a Stanscrew fastener specialist. He recommended Stanscrew's heat-treated cap screws with the extra toughness resulting from "Carbon Restoration" . . . cadmium plated for greater consumer appeal and higher corrosion resistance . . . and produced in an unusual length to precisely meet all the requirements for installation on Willy's "Jeep" vehicles.

Thus, by slightly modifying one of the more than 4,000 standard fasteners in Stanscrew's complete line, this specialist was able to supply a fastener which eliminated the necessity for a costly special.

Quite possibly your Stanscrew fastener specialist can do the same for you. He can bring to your problem years of specialized experience, and the services of an outstanding engineering staff. And he can make recommendations from a complete line . . . always in stock, quickly available.

So for the answer to your "special" fastener problem, just call your Stanscrew distributor today. He will arrange for a meeting with the Stanscrew fastener specialist in the very near future.

STANSCREW FASTENERS

CHICAGO | THE CHICAGO SCREW COMPANY, BELLWOOD, ILLINOIS
HMS | HARTFORD MACHINE SCREW COMPANY, HARTFORD, CONNECTICUT
WESTERN | THE WESTERN AUTOMATIC MACHINE SCREW COMPANY, ELYRIA, OHIO

STANDARD SCREW COMPANY 2701 Washington Boulevard, Bellwood, Illinois

METAL POWDERS

Per pound, in ton lots for minus 100 mesh

Sponge iron, 98+% Fe, 100 mesh, freight allowed east of Miss. River, ocean bags, 23,000 lbs. and over ..... 10.5¢
Sponge iron, 98+% Fe, 100 mesh, f.o.b. point of origin for shipment west of Miss. River, 100 lb. bags ..... 9.5¢
100 mesh, cutting and scarfing grade, 100 lb pails ..... 8.5¢
40 mesh, welding rod coating, 100 lb. bags ..... 7.7¢
Canadian sponge iron, del'd in East, 23,000 lbs. and over ..... 10.5¢
Atomized iron powder, 98% + Fe, 40 mesh, f.o.b. point of origin, in 100 lb. bags ..... 7.7¢
Atomized iron powder, 98% + Fe, f.o.b. point of original, in 100 lb. bags—RZ-365—freight allowed east of Miss. River ..... 10.5¢
Atomized iron powder, 98% + Fe, cutting and scarfing grade, f.o.b. point of origin ..... 8.5¢
Electrolytic iron, annealed, hydrogen reduced, 100 mesh iron powder, f.o.b. point of origin... 10.5¢
imported 99.5+% Fe .... 24.5¢
200 mesh ..... 33.0¢
Electrolytic iron, unannealed minus 325 mesh, 99+% Fe 57.0¢
Carbonyl iron size 3 to 20 micron, 98%, 99.8+% Fe.. 88.0¢ to $2.85
Aluminum, freight allowed.. 38.00¢
Brass, 5000 lb. lots ..... 31.0¢ to 46.7¢
Cobalt, reduced, 99.75%, f.o.b. point of origin..... $2.94
Copper, electrolytic ..... 41.00¢
Copper, electrolytic, imported, per lb., New York. 41.9¢
Copper, precipitated, 24,000 lbs. and over, del'd..... 40.5¢ to 45¢
Copper, atomized ..... 39.8¢ to 48.3¢
Chromium, electrolytic, 99.85% min. fe .03 mix. del'd $5.00
Lead, f.o.b. point of origin (2000 lbs. or more) ..... 19¢
Manganese, f.o.b. point of origin ..... 46.0¢
Molybdenum, 99% ..... $3.60 to $3.95
Nickel ..... $1.05 to $1.13
Nickel steel powder, del'd in East, 23,000 lbs. and over 13¢
Solder powder .....13¢ plus met. value

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Machine and Carriage Bolts	Less than Container Price	1 - 4 Containers	5 Containers	20,000 Lb.
¼" and smaller x 6" and shorter	34	53	58	62
5/16" x 3" x longer than 6"	9	27	34	41
Rolled thread carriage bolts ½" & smaller x 6" and shorter	33	46	54	56
Lag, all diam. x 6" & shorter	10	28	35	42
Lag, all diam. longer than 6 in.	*9	13	22	30
Plow bolts, ½" and smaller x 6" and shorter	10	28	35	42

(Add 25 pct for broken case quantities)

	Full case or Keg price
Nuts, Hex, HP reg. & hvy.	
⅝ in. or smaller	62
¾ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
⅝ in. and smaller	62
¾ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
⅝ in. and smaller	41
Semi-finished Hex Nuts	
⅝ in. or smaller	62
¾ in. to 1½ in. inclusive	57
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished	
⅝ in. and smaller	65
Rivets	
	Base per 100 lb
½ in. and larger	$12.25
	Pct. Off List
7/16 in. and smaller	19

Cap Screws *Discount (Packages)*

Full Finished H. C. Heat Treat

New std. hex head, packaged	Full case	
⅝" diam. and smaller x 6" and shorter	54	42
⅝", ¾", and 1" diam. x 6" and shorter	38	23
⅝" diam. and smaller x longer than 6"	..	..
¾", ⅞", and 1" diam. x longer than 6"	..	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
⅝" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅜" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Discount Mach. Screws	Stove Bolts
Cartons	60	60
Bulk *Quantity*		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ⅜" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
In Bulk *Quantity*		
⅜" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots 41.50
Electrodeposited 32.75
Brass, 80-20, ball anodes, 2000 lb or more 45.50
Zinc, ball anodes, 2000 lb lots 16.50
(for elliptical add 1¢ per lb)
Nickel, 99 pct plus, rolled carton, 5000 lb 1.0225
(Rolled depolarized add 3¢ per lb)
Cadmium 1.55
Tin, ball anodes $1.05 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum 66.20
Copper sulphate, 100 lb bags, per cwt. 22.15
Nickel salts, single, 100 lb bags.... 45.00
Nickel chloride, freight allowed, 100 lb 52.25
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums 23.70
(Philadelphia price 24.15)
Zinc cyanide, 100 lb 60.75
Potassium cyanide, 100 lb drum N. Y. 45.50
Chromic acid, flake type, 10,000 lb or more 30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 6 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*	.....	.....	.....	.....
Baltimore	$.10	8.10	9.00	9.78	8.80	8.76	8.60	8.75	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99	.....	.....	.....	.....	.....
Boston	.15	9.48	10.54	11.55	9.84	10.17	10.13	10.26	13.49*	16.79	15.81	20.29	19.56
Buffalo	.15	8.40	9.15	11.22	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago	.15	8.40	9.60	10.60	8.66	9.04	9.15	9.14	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.65	10.60	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland	.15	8.51	9.69	10.35	8.78	9.28	9.54	9.25	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.....	.....	.....	20.84
Detroit	.15	8.66	9.85	10.96	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60	.....	8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.62	10.27	11.32	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[3]	11.20-11.80	12.15	9.15	9.10	9.25	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80	.....	8.40	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee	.15	8.54	9.73	10.74	8.80	9.18	9.37	9.28	9.54	16.34	15.34	19.84	19.09
New York	.10	8.97	10.23	10.66	9.74	9.87	9.84	10.09	13.31*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20	.....	.....	8.86	8.65	9.20	8.99	10.70	.....	.....	.....	.....
Philadelphia	.10	8.10	10.00	11.27	8.56	8.85	8.60	8.75	12.05*	16.58	15.58	20.08	19.33
Pittsburgh	.15	8.50-8.60	9.70-9.95	11.00	8.76	9.05	9.15	9.14	11.40*	16.20	15.20	19.70	18.95
Portland		10.00[1]	11.75[2]	13.30[3]	11.95[4]	11.50[5]	11.10[6]	9.85[7]	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20	11.40	9.65	10.10	9.95	10.25	13.85	17.05	16.35	21.05	20.60
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.69	9.94	10.98	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	10.86	8.99	9.45	9.53	9.70[7]	10.16	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36" x 120"; [2] 20 ga. x 36" x 120"; [3] 26 ga. x 30" x 96"; [4] 4¼" x 1" in lots of 1000 to 9999; [5] sheared plate ¼" x 84" in lots of 1000 to 9999; [6] 3" x 5.70" in lots of 1000 to 9999; [7] M-1020—1-in. rounds in lots of 1000 to 9999. [8] 15 ga. & heavier.

(Effective Oct. 6, 1958)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	66.50	67.00	67.50	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	67.00	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1*, *I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	30.25	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	28.25	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	33.75	33.75	34.25	34.25
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50 52.75	61.50	32.00	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7,* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R5;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton, Massillon, O., *R5;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U5* (plus further conversion extras); *W1* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1* (25¢ per lb. higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R5;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R5;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8.*

(Effective Oct. 6, 1958)

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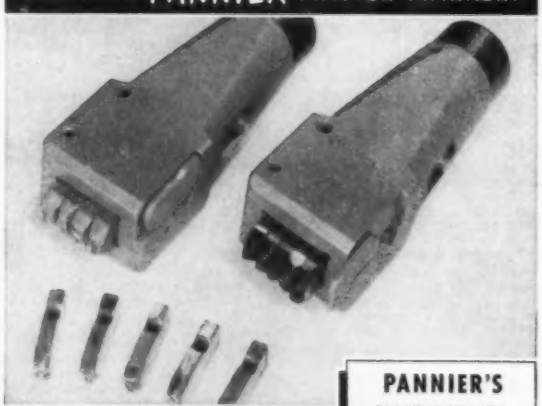

New Roto-Pin type lock is integral part of *all* Pannier Supreme Holders . . . eliminates loose, bent, dropped, or lost pins . . . flip it open to change type . . . flip it back to securely lock type in clear-marking position.

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Safe, fast type changing. Holder in variety of styles. Machined from High-Grade Bar Tool Steel. Hardened anvil maintains type alignment. Striking Head of Tool Steel . . . Replaceable to add long service life to Holder.

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FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
7-8½% max C, 50-55% Cr, 3-6% max Si 25.75
7-8½% max C, 50-55% Cr, 3% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.31
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	29.40	14.60
Ton lots	34.65	16.35
Less ton lots	36.25	18.55

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads 25.65
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads 24.25
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ⅛ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton (Bulk)	Less
0.07% max. C, 0.06% P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet 15.10
Packed, pallets, 3000 lb up to carloads 16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots, packed	Carloads, packed
96.75% Si, 1.25% Fe..	24.70	23.40
98% Si, 0.75% Fe	24.45	24.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.
Openhearth 3.20
Crucible 3.30
High speed steel (Primos) 3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective Oct. 6, 1958)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk ..... 10.35¢
Ton lots ..... 11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.28

Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots $4.00
Less ton lots..... 4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta $3.80

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.68

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.41
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanni, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium, per lb of alloy

35-40% f.o.b. freight allowed, carloads, packed ..... 27.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C. 1 in. x D, ton lots.. $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainni, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

PROPOSALS SOLICITED FOR LEASE OF DEPARTMENT OF THE ARMY INDUSTRIAL FACILITIES

All or portions of the above installations are available for use for commercial purposes. Possible uses are unlimited.

Facilities: Oleum plants (sulphuric acid); nitric acid; acid concentration; ether still; nitrocellulose; various explosive manufacturing; organic chemical manufacturing; steel foundries; heavy and light manufacturing; loading and assembling; offices; warehouses; power plants; storage tanks; many other facilities.

Transportation: Rail and highway facilities are available to these installations, including intra-plant rail and road systems.

Utilities: All necessary utilities are available.

Labor: There is a surplus of both skilled and unskilled labor in the immediate vicinity of most plants.

Detailed information, arrangements for inspections, invitations for proposals and sample form of lease may be obtained from the U. S. Army Division Engineer having jurisdiction over the area in which you are interested. The addresses of the Divisions Engineers are:

MISSOURI RIVER
PO Box 1216
Omaha, Nebr.

OHIO RIVER
PO Box 1159
Cincinnati, Ohio

NORTH ATLANTIC
90 Church St.
New York 7, N. Y.

SOUTH ATLANTIC
PO Box 1889
Atlanta, Georgia

NORTH CENTRAL
536 So. Clark St.
Chicago 5, Ill.

SOUTH PACIFIC
PO Box 3339
Rincon Annex
San Francisco, Calif.

SOUTHWESTERN: 1114 Commerce St., Dallas, Texas

MISSOURI RIVER
1. Cornhusker Ordnance Plant, Grand Island, Nebr.
2. Iowa Ordnance Plant, Burlington, Iowa
3. Kansas Ordnance Plant, Parsons, Kansas
4. Lake City Arsenal, Independence, Mo.
5. Nebraska Ordnance Plant, Wahoo, Nebr.
6. Rocky Mountain Arsenal, Denver, Col.
7. St. Louis Ordnance Plant, St. Louis, Mo.
8. St. Louis Ordnance Steel Foundry, St. Louis, Mo.
9. Sunflower Ordnance Works, Lawrence, Kansas

NORTH ATLANTIC
1. Birdsboro Ordnance Steel Foundry, Birdsboro, Pa.
2. Burlington Ordnance Plant, Burlington, N. J.
3. Edgewood Arsenal, Edgewood, Md.
4. Ordnance Assembly Plant, Edgewood, Md.
5. Radford Arsenal, Radford, Va.

NORTH CENTRAL
1. Badger Ordnance Works, Baraboo, Wisc.
2. East Chicago Ordnance Steel Fdy., East Chicago, Ind.
3. Joliet Arsenal, Joliet, Ill.
4. Kingsbury Ordnance Plant, La Porte, Ind.
5. Twin Cities Arsenal, New Brighton, Minn.
6. Wabash River Ordnance Works, Newport, Ind.

OHIO RIVER
1. Coraopolis Ordnance Steel Foundry, Coraopolis, Pa.
2. Indiana Arsenal, Charlestown, Ind.
3. Jefferson Proving Ground, Madison, Ind.
4. Lima Ordnance Steel Foundry, Lima, Ohio
5. Marshall Plant, New Martinsville, W. Va.
6. Ravenna Arsenal, Apco, Ohio
7. Ridgewood Ordnance Plant, Cincinnati, Ohio

SOUTH ATLANTIC
1. Alabama Ordnance Works, Childersburg, Ala.
2. Holston Ordnance Works, Kingsport, Tenn.
3. Milan Arsenal, Milan, Tenn.
4. Phosphate Development Works, Sheffield, Ala.
5. Volunteer Ordnance Works, Tyner, Tenn.

SOUTH PACIFIC
1. Pacific Ordnance Steel Foundry, Pittsburg, Calif.
2. Riverbank Ordnance Plant, Riverbank, Calif.

SOUTHWESTERN
1. Lone Star Ordnance Plant, Texarkana, Texas
2. Longhorn Ordnance Works, Karnack, Texas
3. Louisiana Ordnance Plant, Shreveport, La.
4. Oklahoma Ordnance Works, Pryor, Okla.
5. Pantex Ordnance Plant, Amarillo, Texas

CORPS OF ENGINEERS, U.S. ARMY

REBUILT—GUARANTEED
ELECTRICAL EQUIPMENT

STEEL MILL SPECIALS

(1) 2200-H.P. Westinghouse Motor, 600 V.D.C., 92/132 R.P.M.

(1) 1250-H.P. Allis-Chalmers Motor, 600 V.D.C., 300/600 R.P.M.

(1) S.S. 4-unit M.G. Set consists of 2500-H.P., 8 P.F. Syn. motor, 11000/4160-V., 3 ph., 60 cy. (1) 1060-K.W. Gen. 600-V.D.C. and (2) 760-K.W. 600-V.D.C. Generators, complete with exciter sets.

(2) S.S. 645-H.P. Mill Motors, each 300-V.D.C. 1000 R.P.M. (used with above 1060-K.W. Gen.)

(2) S.S. Reel Motors (mill type) each 940-H.P. 800/1000 R.P.M., 600-V.D.C. (used with above (2) 760-K.W. Gen.).

We will sell the above complete PACKAGE or segregate it to suit your REQUIREMENTS with necessary CONTROLS

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Sales Gains Cheer New York Dealers

Used machinery sales in that area are on the rebound and sellers are optimistic.

They report more companies are again spending money for long-needed equipment.

▪ Fall has brought new crispness to used and rebuilt machinery sales in the New York area. Dealers report significant improvement in the past month's business, and are optimistic about the winter.

The sales spurt appears to have two direct causes: (1) New orders for area metalworkers, including subcontractors; and (2) loosening of the purse strings by top management.

Atom Age Orders—Recent sizable sales of power presses and bending rolls reflect new contracts with the Atomic Energy Commission and missile makers, machinery dealers believe. Continuing chemical industry expansion has also brought new business to equipment fabricators. Firms in these groups normally buy machinery when they have jobs on hand, and currently, at least, have no trouble in paying for needed tools. Says one dealer: "I'm prepared to offer financing on sales, but most people these days don't need it."

Request Granted — Buying by other customers reflects the availability of cash. These buyers are generally larger firms, where engineering and production have been asking for equipment for some time. But top management, anxious to keep cash reserves high, has been holding back on approvals. Now purchasing is getting a green light, and the machinery is moving.

A leading dealer in electrical machinery and equipment reports that in September he completed several deals which had been hanging fire for several months. He adds he has a good list of similar potential orders he hopes will come through in last quarter. Several of these are connected with sizable plant expansions.

Wanted Items—Demand in virtually all lines is still for late-model equipment, with emphasis on heavy-duty machines. "It gets harder every day to sell any equipment made during the World War II period," comments one dealer. Tool stocks are generally adequate, although late-model press brakes and bending rolls are in good demand.

Depreciation Change

Customers buying used or new equipment can take advantage of a new depreciation method, the Machinery Dealers National Assn. is advising dealer members.

Under a tax revision act passed by Congress used machine buyers get an initial one-shot depreciation allowance the first year. This deduction, on any property with a useful life of at least six years, is 20 pct on the first $10,000 worth of purchased equipment.

The new allowance is in addition to regular (straight-line or accelerated) depreciation schedules.

CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS
8' x 1/4" Bertsch Initial Type
12' x 5/8" Hilles & Jones Pyramid Type
13' x 3/16" Bertsch Initial Type—NEW
32' x 3/4" Baldwin Pyramid Type

BORING MILL—VERTICAL
144" Cincinnati Hypro Vertical Boring Mill
Two Swivel Type Ram Heads

CRANES—OVERHEAD ELECTRIC TRAVELING

7½ ton P&H	60' Span	230 Volt D.C.
8 ton P&H	55' Span	220/3/60
10 ton P&H	50' Span	230 Volt D.C.
10 ton P&H	39' Span	230 Volt D.C.
10 ton Milwaukee	57' Span	220 Volt D.C.
10 ton Shaw	48' Span	230 Volt D.C.
10 ton Whiting	75' Span	220/3/60 A.C.
10 ton Shaw	120' Span	230 Volt D.C.
15 ton P&H	50' Span	230 Volt D.C.
15 ton Northern	54' Span	230 Volt D.C.
15 ton Shepard Niles	56' Span	230 Volt D.C.
15 ton N-B-P	100' Span	220/3/60 A.C.
120 ton Shepard Niles	77' Span	220/3/60

DRAW BENCHES
3000 lb. Draw Bench, 20 ft. Pull
7000 lb. Draw Bench, 50 ft Pull—New 1956
10,000 lb. Draw Bench, 50 ft. Draw—LATE

FORGING MACHINES
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb. to 12,000 lb. Incl.

LEVELERS—ROLLER
54" McKay 17 Rolls 4½" dia.
60" Aetna Standard, 17 Rolls 4⅝" dia.
72" McKay, 15 Rolls 4¾ dia.
84" Bliss 17 Rolls 5⅛" dia.

PLANER—OPEN SIDE
70" x 110" x 16' Liberty Four Head

POLISHING MACHINE
20" Murray-Way Micro Polish Machine—NEW 1950

PRESSES—HYDRAULIC
500 ton Watson Stillman Piercing Press 48" x 72"
500 ton HPM Fastraverse, Bed 36" x 36"
600 ton Elmes 36" stroke, 48" x 45" Bet. Cols.
1000 ton HPM Fastraverse, Bed 48" x 72", 36" Stroke
4500 ton B-L-H Bed 68 x 68", Stroke 40"

PRESSES—STRAIGHT SIDE
190 ton Toledo #57½, 10" Stroke, Bed 20" x 20"
215 ton Clearing, 24" Stroke, Bed 36" x 42"

PRESS—TOGGLE DRAWING
#168⅜ Toledo, 18" Stroke of Blankholder, 26" Stroke of Plunger, Bed 48" x 51"

PUNCH & SHEAR COMBINATIONS
Buffalo #1½ Ironworker
Cleveland Style C; Arch Jaw, Capy. ⅜" x ⅜"
Cleveland Style EF, Capy. 1¼" x 1"

ROLLING MILLS
6" x 5" Torrington Flat Wire Mill Line
2½" x 9" x 9" 4-High Strip Mill
3¼" x 7" Six Roll Cluster Mill
10" x 14" Single Stand Two High
10" x 16" Single Stand Two High
12" x 12" Single Stand Two High
12" x 16" Single Stand Two High
16" x 24" Single Stand Two High
20" x 36" Single Stand Two High

ROLL—FORMING
18 Stand Custom Built, 2½ Shaft, will take 36" wide

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108" Bertsch, Seven Rolls 9" Dia.
72" Niles 7 Rolls 9" Dia. Motor Driven

SHEAR—ANGLE
6 x 6 x ⅝" Hilles & Jones

SHEAR LINES
36" x .020 Ga. Hallder Shear Line
96" Cleveland, Capy. 14 Ga. Pay Off & Tables

SHEARS—SQUARING
6' x 14 Ga. Edwards, Motor Drive—LATE
10' x 5/8" Niagara
14" x 3/16" Cincinnati #1814

SLITTERS
12" Waterbury Farrel, 2⅜" Dia. Arbor
36" Yoder M-2-½ Slitting Line
36" Yoder, 4½" Dia. Arbor

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Torrington #1734 12-Roll, Capy. 1⅜" Rd, 1-9/16" Sq. etc.
Kane & Roach #5250 5-Roll, Capy. 2½" Solid, 3⅜" Tube
Medart OA, Capy. ⅛" to 1" Solid
½" Shuster, With 12 ft. Cut Off
⅝" Shuster, With 12 ft. Cut Off

SWAGING MACHINES
#4A Standard 2-Die, Capy. 2⅛" Tube
#6½A Fenn Capacity 3¾ Tube 1¼" Solid
10" Die Length Hydraulic Feed, LATE

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20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Baldwin Southwark Compression
60,000 lb. Olsen Univ. Hydraulic
100,000 lb. Olsen 3-Screw Universal

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No. 60 Waterbury Farrel, for vertical operation
No. 100 Waterbury Farrel Thread Roller

TUBE REDUCERS
1½" Tube Reducer for steel
2½" Tube Reducer for aluminum

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Type B Morgan 4-Block Capy. #5 Rod down
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784 CFM	125 psi	14½-8½ x 7 Joy WN 112.
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1007 CFM	100 psi	19-11 x 12 Chic. OCB.
1008 CFM	100 psi	16-10½ x 8 Worth. YC. 150 HP 3-60-440—SAR.
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FAMOUS FALLACIES *about industrial advertising*

We don't see any results from our advertising

John L. Gillis replies to this one...

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The specific effect of industrial advertising upon the market can seldom be measured alone.

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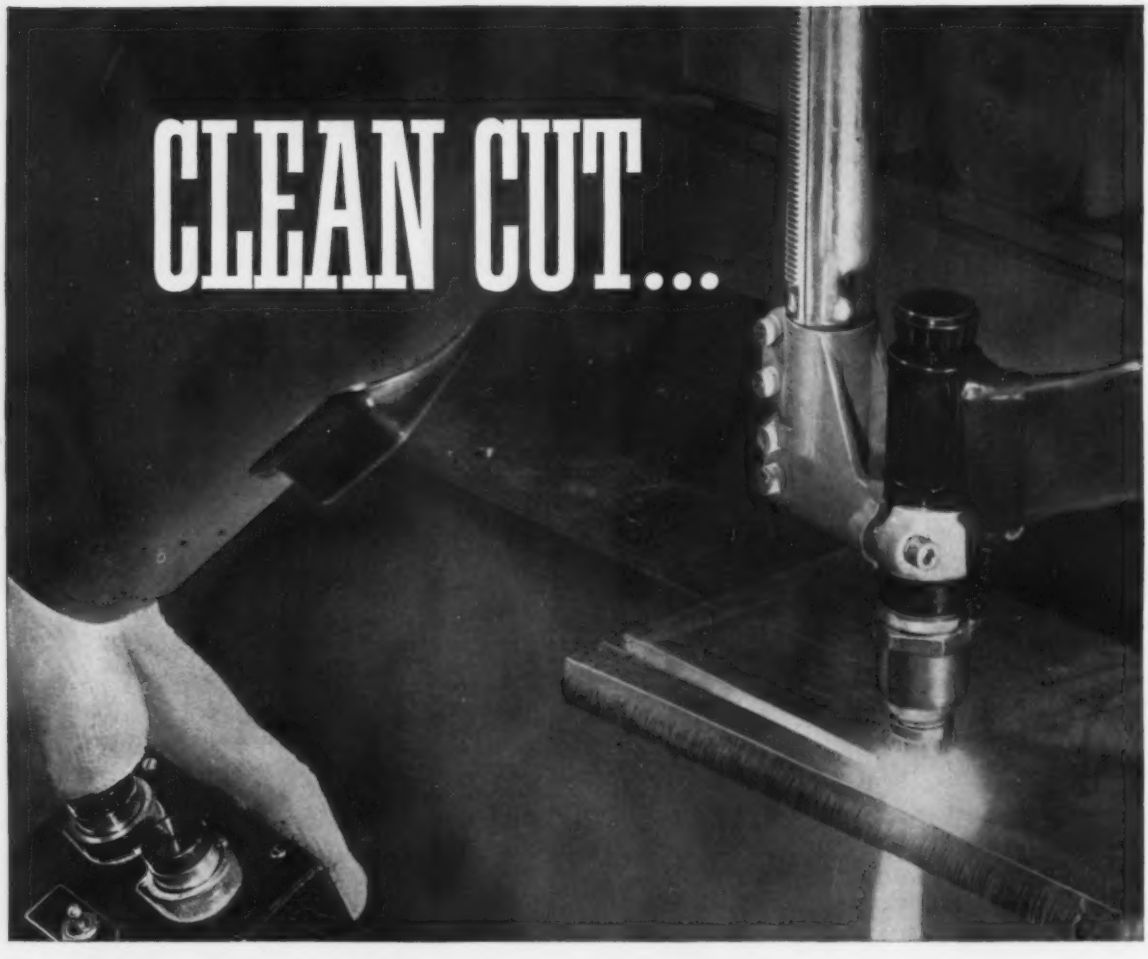

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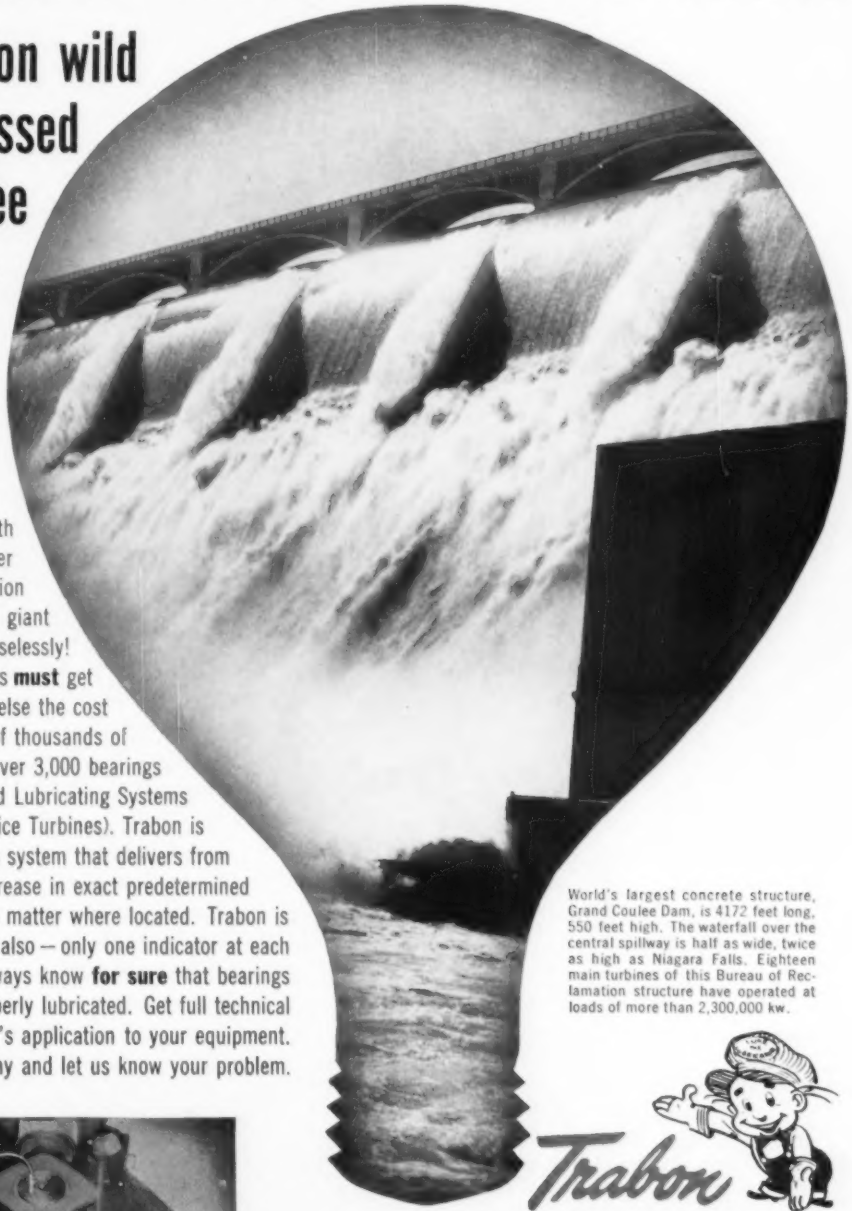

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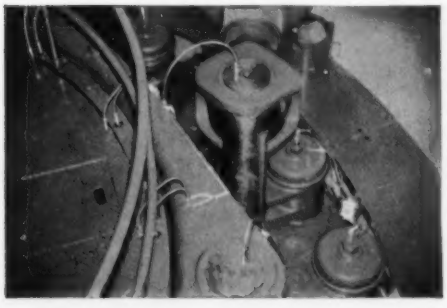

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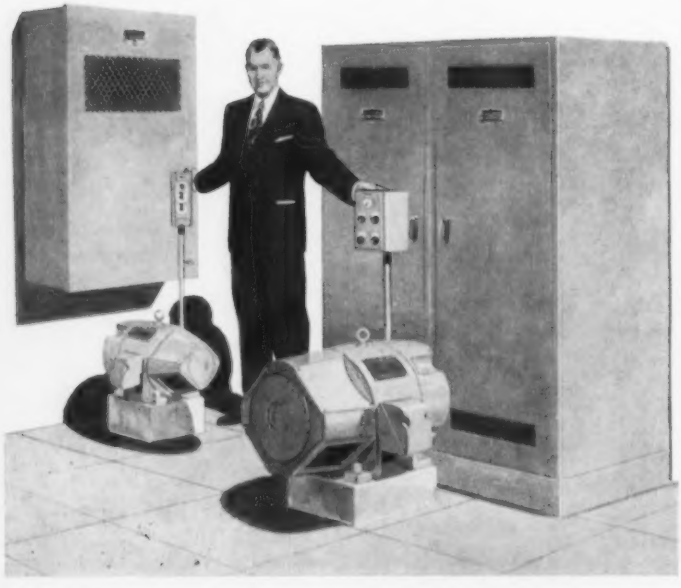

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